The School of Divinity
and
The Science Studies Unit
of
The University of Edinburgh

Life Before Darwin:
Body, Mind, and Soul in Britain, 1815-1859

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Thesis submitted for the degree of Doctor of Philosophy

2005

Declaration

This thesis has been composed by me and is my own work. It has not been submitted for any previous application for a degree or professional qualification.

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June 2005

Abstract

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How does bodily matter become alive? Is the mind reducible to the brain? These questions became crucial in the emergent discipline of life science at the turn of the nineteenth century, when the term 'biology' was coined. The new scientific theories that arose at this time directly impinged on contemporary religious beliefs concerning the soul as the principle of immortality, and the mind as the divinely-endowed basis for human morality. Through an interdisciplinary study of three episodes, all of which originated in 1816, this thesis examines the interface between science and religion with regard to souls, minds, and the living body, in the half-century before Darwin's *Origin of Species.*

The first episode focuses on a series of controversies (1816-1822) surrounding William Lawrence, a professor at the Royal College of Surgeons. He postulated that life could emerge from matter, and that matter could generate thought and sensation. The express materialism in these views engendered strong scientific and religious opposition. This study argues that the scientific opposition to Lawrence's views was motivated largely by a desire to defend the institutional and professional standing of the surgeons rather than by a commitment to oppose Lawrence's materialism. In examining the religious opposition to Lawrence, this thesis concludes that ultimately it was a concern for a secure institutional basis for morality rather than a wish to defend the doctrine of the soul *per se* that was at stake.

The second episode revolves around George Combe, the influential author of *The Constitution of Man* (1828). He was decried as an atheist because his phrenological science allegedly reduced the mind to the physical brain. This thesis offers a new interpretation of Combe's science as the means through which he framed a natural religion with a code of morality based on natural law. It was a religion that sought to recast the role of a more materialistic conception of the mind as the vehicle for morality, and to displace the reliance on an immortal soul and a future state for the enforcement of morals.

The third episode centres on Mary Shelley's *Frankenstein* (1818). Through studying the novel as the fable of its sub-title, *The Modern Prometheus*, I conclude that the power of Mary Shelley's moral vision lies in its inescapable warning that an absolute denial of the spiritual aspects of life is inimical to our humanity. Without being explicitly religious, *Frankenstein* encapsulates a new kind of secular humanist spirituality that denies outright materialism.

In summary, this thesis argues that the interface between religion and biology, concerning the nature of the living body and the mind, despite initial appearances, were not primarily over the issues of materialism. The three episodes studied illustrate a spectrum of attitudes towards scientific materialism, and it is found that ultimately, it was the necessity for a secure basis of morality that shaped the responses.

Dedication

To my husband, Wilson

whose inspiration was the beginning of this thesis
whose love saw its conclusion

and

Rebecca & Aidan

who have graciously lived with this thesis
ever since their birth

Preface

I thank Professor Stewart Brown for accepting me as a PhD student even though my interests lay on the margins of ecclesiastical history proper. Throughout the project, his comments on my work were always judicious and pertinent. In particular, he has educated me concerning many aspects of nineteenth-century British church history, on which his knowledge is unsurpassed. Last, but not the least, I must thank Professor Brown for his understanding of my family commitments, which started and grew with this thesis.

Dr John Henry generously accepted the role of being my second supervisor after this project started. That someone with a degree in ecclesiastical history has managed to write a thesis with an emphasis on the history of science is due in no small measure to Dr Henry's encouragement and support. His extensive knowledge of the literature has put me right on numerous occasions, and extended my own knowledge considerably. The practical assistance Dr Henry offered during the final few weeks of this project has contributed more to its conclusion than he can ever imagine.

The genesis of this thesis is tortuous. After a first degree in English and German literature, I trained and practised as a chartered accountant. However, being married to a physicist who has more theology books on his shelves than scientific ones finally rubbed off on me, and I embarked on a second first degree in theology. During this period, I discovered my interest in history. A final-year dissertation on William Lawrence was the immediate predecessor to this work.

I thank my husband, Wilson, for inspiring me to write this thesis in the first place by his practice of science as a Christian believer. He and the children, Rebecca and Aidan, gave me their unreserved support throughout the project. To all three of them this thesis is dedicated.

Contents

The Achilles Heel in the System of Nature

> During the seventeenth century there evolved the scheme of scientific ideas which has dominated thought ever since. It involves a fundamental duality, with *material* on the one hand, and the other hand *mind*. In between there lie the concept of life, organism, functions, instantaneous reality, interaction, order of nature, which collectively form the Achilles heel of the whole system.
>
> Alfred North Whitehead, 1925[1]

I

'Life before Darwin', as the title suggests, this thesis is a study of the sciences of life in the period preceding the publication of Darwin's *The Origin of Species*, which was a watershed event not only in intellectual history, but more specifically, in the history of science and religion. With compelling evidence, *The Origin* established that the mechanism of evolution was by a process which Darwin called natural selection. In the history of the relations between science and religion, the publication of *The Origin* in 1859 coincided with a new epoch. It marked, to a large extent, the end of natural theology and the rise of the 'conflict thesis'. The 'conflict thesis' was the result of a number of newly professionalizing scientists deliberately seeking to interpret the history of the relationship between science and religion as a history of two forces fundamentally at variance with each other, with religion as the obscurantist protagonist.[2] Despite Darwin's attempt to advance his theory purely as a scientific thesis, its religious import did not escape his contemporaries, and it has been described as destroying 'at one blow the central tradition of recent English Protestant apologetics – Natural Theology'.[3]

This thesis examines the antecedent period to the publication of *The Origin* in 1859. While fully acknowledging the significance of *The Origin* in shaping the history of science and religion, this thesis proceeds with the view that *The Origin*

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[1] Alfred North Whitehead, *Science and the Modern World* (Cambridge, 1926), 80-1.

[2] See Frank Turner, *Contesting Cultural Authority, Essays in Victorian Intellectual Life* (Cambridge, 1993).

[3] J. W. Burrow, Introduction to Charles Darwin, *The Origin of Species* (Penguin Classics, 1985), 40. The title for the first edition was *On the Origin of Species.*

was an epoch-*marking*, as distinct from an epoch-*making,* event in the history of science and religion. In other words, while the epoch-making significance of *The Origin* for the study of life science is indisputable, its impact for the history of science and religion was more of a culmination of the scientific and religious attitudes in its antecedent period. The publication of *The Origin* brought into sharper relief the pressures and tensions in the relationship between science and religion that had been growing in the first half of the nineteenth century. This thesis is a study of some of these pressures and tensions in the interface of science and religion in the pre-Darwinian period.

'Life before Darwin' pertains to life in three senses of the word. In its most immediate sense, it refers to the inception period of the science of life before Darwin, taking into account its political and cultural milieu. Secondly, in its more specific sense, it refers to the new scientific and philosophic approaches to the two fundamental questions regarding matter and mind; namely, 'How does matter become alive?' and 'What is the nature of the mind?' Thirdly, 'Life before Darwin' pertains to the religious life of this period, which had its basis in beliefs in immortality and morality rooted in the duality of mind and matter. By studying three episodes that took place in Britain in the aftermath of the Napoleonic wars, this thesis attempts to illuminate a 'life before Darwin' in these different senses.

Britain forms the geographic focus for this study. It is not because Britain was the leading nation in the advance of life science in this period; that honour belonged to France. Rather, Britain was chosen partly because it was the home of Darwin. More importantly, 'the holy alliance between science and religion' – the belief that religion and science were in a mutually supportive relationship and revealed in different ways the same truth, was 'a peculiarly English phenomenon', a legacy from the great names of Francis Bacon, Robert Boyle and Isaac Newton.[4] As the eighteenth century drew to its close, the Reverend William Paley helped to revive this tradition through his eloquent defence of natural theology with the 'design argument' — the argument that the evidence of design in the natural world presupposed the existence of God the designer. It is therefore in Britain where the challenges of new scientific ideas on religion were most acutely felt.

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[4] Basil Willey, *The Eighteenth Century Background, Studies on the Idea of Nature in the Thought of the Period* (London, 1940), 136-7; the author contrasts England with France in this respect.

Through Nature to Nature's God — the central tenet of natural theology was that the evidence of design in the created world demonstrated the sentient will of its benevolent Creator. Belief in the immutability of the species and their independent creation, which was widely held by most naturalists contemporary with Darwin, were the corollary beliefs supporting the design argument. Darwin argued that not only were species mutable, but that mutations were either preserved or led to extinction by a process of natural selection in the struggle for life. Although it was not his intention to dismantle natural theology, the effect of his hypothesis was to displace the design argument with the mechanism of natural selection, and the benevolent will of a Creator, with the impersonal law of nature. The 1860s saw Thomas Huxley, the champion of Darwin, promoting the 'conflict thesis' alongside the evolutionary theory with such gusto that religion almost became synonymous with anti-evolutionary thought. 'Extinguished theologians lie about the cradle of every science as the strangled snakes beside that of Hercules' was one of the typically vituperative utterances of Huxley.[5] Across the Atlantic, John Draper's *History of the Conflict between Religion and Science* (1874) and Andrew White's *The Warfare of Science and Theology in Christendom* (1896) were two seminal titles that gave further support to the idea of an inevitable conflict between science and religion. Such an idea became so entrenched in the public minds that when Whitehead gave his Lowell Lectures in 1925, he remarked that 'the conflict between religion and science is what naturally occurs to our minds when we think of this subject'.[6]

Within the British context, the two major historical works on the pre-Darwinian period in the history of science and religion are Charles Gillispie's *Genesis and Geology, 1790-1850* (1951) and Pietro Corsi's *Baden Powell and the Anglican Debate, 1800-1860* (1988). Gillispie aims at giving 'an account of the immediate background of the pattern of scientific disagreement which culminated in disputes about Darwin's book and to attempt to analyse the causes of that disagreement'.[7] He argues that the 'holy alliance' between science and religion actually persisted, though not always smoothly, until the mid-nineteenth century, and

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[5] Thomas Huxley, *Collected Essays,* 2 vols. (London, 1894), II: 52.

[6] Whitehead, *op. cit.*, 83.

[7] Charles Gillispie, *Genesis and Geology, A study in the Relations of Scientific Thought, Natural Theology and Social Opinion in Great Britain, 1790-1850*, first published 1951 (Harvard, 1996), xxvii.

that geology played a crucial role in fraying this alliance.[8] For this reason, Gillispie was led to the investigation of geology rather than biology. The question of species, as an issue arising from the development of biology, is addressed in Corsi's work. Against the background of contemporary debates within the Church of England over theology, biblical criticism and science, Corsi assesses 'the contribution of Baden Powell (1796-1860) to debates on the methodology of science, natural theology and the question of species'.[9] The importance of pre-Darwinian developments for the relationship of science and religion is further highlighted by John Brooke's *Science and Religion, Some Historical Perspectives* (1991),[10] a work justly acclaimed for its broad scope and impressive command of detail.

In addressing the relationship between science and religion in the pre-Darwinian period, both Gillispie and Corsi have focused on the science of geology. This focus on geology during the pre-Darwinian period is fully justified by the fact that without the discoveries of geologists, the question of species probably would not have arisen. However, the question of the origin of species that had dominated the study of life science before *The Origin* was rather different. This thesis is an essay in the historical study of the relationship between science and religion similar to Gillispie and Corsi. But in the choice of subject-matter, this thesis focuses on the life sciences rather than geology, in recognition that there was an interface between science and religion before Darwin revolving the science of life which is worthy of study in its own right.

II

In terms of methodology and research design, this study has deliberately given prominence to the primary texts that have given rise to the controversies on the origin of life and the nature of the mind, which mean William Lawrence's *Lectures of 1816 and 1818* and George Combe's *The Constitution of Man* (1828) respectively. In choosing to study Mary Shelley's *Frankenstein* as, in effect, a critical commentary on the ongoing debates on the nature of life and the mind, this study again is trying to

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[8] Ibid., Note No. 13 to Chapter 1, 263.

[9] Pietro Corsi, *Science and Religion, Baden Powell and the Anglican Debate, 1800-1860* (Cambridge, 1988), 3.

[10] John Hedley Brooke, *Science and Religion, Some Historical Perspectives* (Cambridge, 1991).

give primacy to a significant text of the period. Insofar as this is a study in the history of ideas, the decision to give prominence to these primary texts is in recognition that the generation, the appreciation, and the deployment of ideas are always located in time and space. To a certain extent, the concepts of the soul, the mind, and the body are all timeless and universal, in that they have existed from time immemorial, and transcend cultural boundaries. However, the substance of these concepts evolves with time, and is the product of a confluence of factors that embrace the range of disciplines from philosophy, psychology, sociology, religion, to science. For instance, the Platonic soul may seem a 'timeless' concept but the ways in which it has been interpreted have been subject to continuous change. Since we share in common the 'concepts' of the body, the mind and the soul with those in the period under study, it is especially important to guard against tinting the substance of these concepts for those living two centuries ago with the hues of our own perception. By research design, this thesis places great emphasis on close reading of the primary literature, in an attempt to recover, and render more familiar, the unfamiliar thoughts of the historical figures.

Secondly, as an historical study of science and religion, it is appropriate to relate briefly the historiography in this area of scholarship. To a large extent, it was the propagation of the 'conflict thesis' by Draper and White in the post-Darwinian period, as explained above, that gave rise to this field of scholarship specialising in the study of how science and religion interrelated through history. After a period of oscillation from the conflict thesis to ambitious claims that religion stimulated scientific advance, a new consensus is emerging. By detailed study of a range of episodes where science and religion interacted, at different ages and in different places, the need for a highly nuanced understanding of these two belief systems and their interactions is now apparent.

Ian Barbour in *Religion in an Age of Science* (1990) laid down the four categories for the taxonomy of science-religion relationships: conflict, independence, dialogue and integration. Barbour is probably the most widely cited author in the study of science and religion, and his taxonomy has been hugely influential. However, as Cantor and Kenny point out, Barbour's argument is 'underpinned by the view that in the science-religion domain there is an inexorable progress from

Conflict, through Independence, to Dialogue and Integration'.[11] Influential as his taxonomy is, Barbour's underlying argument betrays a whiggish agenda for the interpretation of the history of science and religion. John Hedley Brooke's demonstration of the need for a wide spectrum of episodes to portray fairly how science and religion have interrelated in history is masterfully done in his *Science and Religion, Some Historical Perspectives* (1991). Brooke and Cantor, in their 1995 Glasgow Gifford Lectures entitled *Reconstructing Nature*, further de-bunk all 'master-narratives' which attempt to generalise the historical relationships between science and religion, and recommend the use of biographical studies as one antidote to 'master-narrative' approaches. While Brooke and Cantor's efforts represent an important contribution in the scholarship of science and religion, they are not directed towards a specific period of history. This thesis is an attempt to put into practice some of the methodology proposed in *Reconstructing Nature* in studying the interface of biology with religion in the pre-Darwinian period. In particular, this thesis has tried to capture this interface through the life of individuals, and through their writings. The biographical approach has also been 'recommended' in a collection of essays on scientific biography, edited by Shortland and Yeo. The claim is that scientific biographies help to safeguard against a positive account of the progress of science, sometimes being written by philosophers or historians of science, whereby the history of science is portrayed 'as steady accumulation of knowledge', with 'particular truths added to a larger edifice of established truths'.[12] While this thesis is not a full-length biography of any of the protagonists, the discussion of the controversies in this thesis centres on these protagonists, drawing in factors like social aspirations and religious allegiance, to tease out the nuances concerning how science and religion interrelated in these individuals.

Finally, this thesis is interdisciplinary in its research method, in appreciation that the interrelationship of science and religion is a product of scientific ideas and religious doctrines crossing fire or reinforcing each other, and the fact that the scientific, religious and cultural attitudes were all set in the wider context of a nation's social-political life and its intellectual milieu. This thesis attempts to bridge the internalist and externalist dichotomy that has dominated debates in

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[11] Geoffrey Cantor and Chris Kenny, 'Barbour's Fourfold Way: Problems with His Taxonomy of Science-Religion Relationships', *Zygon*, 36 (2001): 765-781, 766.

[12] Michael Shortland and Richard Yeo (ed.), *Telling Lives in Science – Essays on Scientific Biography* (Cambridge, 1996), 4.

historiography in the realm of history of science in the 1960s and 70s. On the whole, historians who have written on the Lawrence and Combe debates tend to analyse the differences between the scientific ideas involved as an internalist study, or account for the controversies in terms of social activities or class struggles. For instance, L.S. Jacyna adopts the internalist approach in discussing Lawrence's theory of life in his article 'Immanence and Transcendence', and takes the externalist approach in discussing the rival theory of life through a study of the 'Images of John Hunter'.[13] For phrenology, de Giustino's *Conquest of Mind* (1975) takes the internalist approach, while Cooter's *The Cultural Meaning of Popular Science* (1984) is primarily an externalist study. The dichotomy between the internalist and externalist approach is demonstrated in a series of articles on the historiographical discussion between Cantor and Shapin on the science of phrenology. It is now recognised that both approaches (internalist and externalist) are inadequate on its own because each approach presents only half the story. For this reason, in research method, this thesis combines both approaches to render a fuller picture of the scientific controversies being studied.

III

At the beginning of the nineteenth century, the discipline of biology was still at its inception. It was not until the 1810s that the term *biology* was coined by Treviranus of Bremen to denote the 'science of life', and it was in 1819 that the term was introduced into the English language by William Lawrence, one of the protagonists in this study.[14] During this period the various branches of life science — comparative anatomy, physiology, histology, pathology, and psychology (including phrenology) — were making major headway. It was a time when those who studied

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[13] L.S. Jacyna, 'Immanence or Transcendence – Theories of Life and Organization in Britain, 1790-1835', *Isis*, 74 (1983): 311-329; and 'Images of John Hunter in the Nineteenth Century', *History of Science*, 21 (1983): 85-108.

[14] 'A foreign writer has proposed the more accurate term of biology, or science of life,' said Lawrence in 1819, *Lecture on Man ii* (London, 1844) 42 (from The Oxford English Dictionary). Treviranus' treatise on biology was still incomplete at the time of Lawrence's lectures. See also June Goodfield-Toulmin 'Some Aspects of English Physiology: 1780-1840', *Journal of History of Biology*, 2 (1969): 283-320, 313.

the facts of nature also philosophised or theorised about their findings.[15] The questions that pre-occupied their theorising concerned no less the *origin of life* and the *nature of the mind.*

As Whitehead has remarked, the scheme of scientific ideas that evolved during the seventeenth century involved a fundamental duality, of matter and mind. In between matter and mind, however, lay the concept of life — organism, functions, and interaction: these formed the Achilles heel of the whole system. When the study of nature turned from the physical universe to its life forms in the nineteenth century, the Achilles heel of the system was revealed. The dualistic framework proved inadequate for the theorising of life and mind. It was the development in biological thought, which 'ultimately broke down the old Cartesian dualism of matter and mind by introducing between them a third term, namely life'.[16] The nineteenth century also saw biology establishing its autonomy as a separate science, independent of physics on the one hand and of metaphysics on the other.

Much of the advance in life science in the late eighteenth and the early nineteenth centuries was made by explaining more and more of the phenomena of life in terms of the laws of physics and chemistry. For instance, the mystery of bodily heat was unravelled through a new understanding of the chemistry of combustion, following the discovery of the oxygen gas by Lavoisier. The corollary of the approach that explained life phenomena in terms of physical or chemical laws was to promote a more mechanistic and materialistic view of life and the mind. This view of life directly impinged on the two central religious beliefs. First by removing the soul as the key to the origin of life, the hope of immortality was brought into question. Secondly, by identifying the mind with the brain, man was no longer a class of his own, but could be placed in the chain of being with animals. Another ramification of equating the mind with the brain was to displace the basis of morality.

This thesis engages with the term 'morality' in two senses, which can be broadly described as *internal* and *external.* The internal sense of morality pertains to that innate notion experienced by individual humans that certain modes of behaviour

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[15] R.G. Collingwood comments on a bad fashion that grew up in the nineteenth century of separating natural scientists and philosophers into two professional bodies, doing harm to both sides. See *Idea of Nature* (Oxford, 1945), 3.

[16] R.G. Collingwood, *The Idea of Nature* (1945, Oxford, 1981), 133.

are right and others are wrong. This innate sense is often designated as the individual's 'conscience'. Its existence presupposes the presence of consciousness, self-awareness, or free will, all of which are considered attributes peculiar to humans alone. From the anthropological point of view, conscience is a universal phenomenon, and as such it transcends temporal and spatial confines. While certain latitude in following the guidance of conscience resides with the individual, in following conscience, the individual often takes account of morality in its external sense. In this second, external sense, morality assumes a collective dimension; it denotes the set of behaviour endorsed by society at large as essential to uphold the social and political structures deemed to maximise the general good. The remit of such a code is to prescribe 'right behaviour', and as such the definition of 'right' is often specific to a particular time and space. The effectiveness of morality in its external sense is necessarily underpinned by an authority rooted in religion or ideology. Morality in its external sense is usually harnessed by the ruling classes to uphold the *status quo*. Revolutions as movements that overturn the *status quo* are often inspired by seminal thinkers whose individual conscience dictates a different set of moral imperatives at odds with the existing code of morality upholding the *status quo*. Thomas Paine was one of the crucial thinkers whose conscience prescribed a different set of moral imperatives which directly inspired the American and French Revolutions. Paine's *Common Sense* became an inspirational pamphlet for the American Revolution, and his *Rights of Man*, for the French Revolution. In overturning the *status quo* as represented by colonialism or absolute monarchy, a new basis of moral authority also came into force. Nature supplanted established religions and became the moral authority behind the revolutionary slogan of *Freedom, Equality* and *Fraternity*.

With these two senses of morality in mind, this thesis examines how the new scientific theories that arose during the period of study impinged on two core contemporary beliefs of the Christian faith. First, that the existence of an immaterial soul formed the basis of both life and immortality, and secondly, that the 'mind' was the divinely-endowed basis for human morality. By shifting the terms of the question regarding the origin of life from the metaphysical to the physiological, early nineteenth-century thinkers channelled the search for the principle of life from the immaterial to the material. The existence of an immaterial soul central to the belief of immortality was therefore called into doubt by what this thesis denotes as *physiological materialism*. Furthermore, the psychological explanation of the 'mind'

as a set of processes conducted within the physical brain challenged the assumption that the mind was a metaphysical entity with an existence independent of any material organ. In what this thesis defines as *psychological materialism,* the mind became identified with the physical brain, or in a less extreme form of psychological materialism, as something that resided in the material organ of the brain. To identify the mind more and more closely with the brain was progressively to erode the distinction between man and the beast. In traditional Christian discourse, it was the mind, as distinct from the brain, that was believed to be the divine origin of man's moral sense, setting him apart from the beast. However, the brain is an organ that man has in common with higher animals, and animals were not credited with possessing any moral sense. Physiological and psychological materialism is loosely termed as *scientific materialism* in this study. One central argument of this thesis is that, in respect of the challenges posed by scientific materialism in nineteenth-century Britain, what was ultimately at stake was not so much the integrity of the immaterial soul or the metaphysical mind, as the need for a secure basis of morality, in both the internal and external senses.

Through the detailed study of three historical episodes in the post-Napoleonic era, this thesis examines the interface between science and religion with regard to the soul, the mind, and the living body. Following this introductory chapter, the second chapter is an exercise in intellectual history, exploring the philosophical concept of materiality, the religious concern for immortality, and the social concern for a secure basis of morality. This chapter of intellectual history is not meant to exhaust the views of all seminal thinkers on the subjects of body, mind and soul, but rather to provide the necessary background on the beliefs held concerning these subjects at the turn of the nineteenth century in Britain. Along with the views of influential thinkers on these subjects, the second chapter also explores educated British opinion at the turn of the nineteenth century through a review of contemporary periodicals, sermons and pamphlets.

As has been noted, the core chapters consider the interface of science and religion through three historical episodes. The first episode revolves around William Lawrence, who, as related earlier, is regarded as having introduced the term 'biology' into English usage. When his materialistic theory of the origin of life and the nature of the mind entangled him in a series of controversies involving his scientific colleagues and prominent clerics, Lawrence's career as a budding scientist

was effectively arrested. Chapter three, on 'Two Theories of Life', examines the scientific issues at the centre of these controversies, and discusses the religious and social ramifications of these issues. The decision to accept or reject a scientific theory was seldom made on scientific grounds alone. The intellectual, social and religious make-up of the participants, the institutional stance and political milieu all played their part in shaping the views of the individuals. These factors, while not directly related to the scientific theories, challenge a purely positivist view of science; they provide the larger context in which to understand the favourable or hostile reception of scientific ideas. The religious implications of Lawrence's ideas are examined in chapter four, entitled 'Materialism and Atheism go hand in hand'. This chapter traces the course of how the established religion (as represented by the Church of England) opposed the new scientific materialism by equating it with metaphysical materialism, and condemning both as promoting atheism and immorality. In condemning scientific materialism, the ultimate concern for Lawrence's opponents was not so much the metaphysical integrity of the soul, as the need to establish a secure basis of morality underpinned by religious authority. For Lawrence's opponents, morality meant a code of right behaviour, as defined by the ruling elite, which helped to uphold the social and political structures of Britain. This moral code was reinforced by the religious authority of the national church and its theology.

The protagonist of the second historical episode is the Scottish thinker, George Combe, widely acknowledged as the leading British proponent of phrenology. The eventual fate of phrenology as a failed science should not blind us to its position as the most popular form of science in the pre-Darwinian era. The rise and decline of phrenology, and its social and cultural significance, are thoroughly explored in Roger Cooter's *The Cultural Meaning of Popular Science* (1984). The place of phrenology in Victorian intellectual history, moreover, is assessed in David de Giustino's *Conquest of Mind* (1974). This thesis does not attempt to go over the ground covered in these two fine works; rather, it is primarily concerned with phrenology as a science of the mind, as an important component in understanding the nature of the mind in the pre-Darwinian period. Chapter five, on 'Two Sciences of the Mind', follows the protracted debate between Combe and Sir William Hamilton, a leading proponent of the Scottish common sense philosophy. It is a debate that struck at the heart of the nature of the mind. The common sense philosophy contended that the mind was a metaphysical entity that could only be comprehended

as a series of mental phenomena within the discipline of mental philosophy. Phrenology, on the other hand, claimed that the mind was a material object that could be subject to empirical methods of scientific study.

As the last prominent representative of the common sense philosophy, Hamilton perceived the dangers posed to the whole basis of morality if metaphysics were to be supplanted by the kind of psychological necessitarianism, which underlay the system of phrenology. As a disciple of Thomas Reid, the founder of the Scottish common sense school, Hamilton upheld that free will was the prerequisite for morality. For Hamilton, without free will, man could not be a true moral agent. He opposed the scientific materialism of phrenology because materialism would ultimately lead to psychological determinism. In this regard, Hamilton also sought to defend the inner sense of morality by maintaining that conscience presupposes free will. Combe, to be sure, was equally concerned with morality. However, Combe differed from Hamilton in that he was not so much concerned with the integrity of the free will as forming the basis of morality in the internal sense, as he was with defining a new authority for external morality. For Combe, the existing basis of morality based on the religious authority of the established church (of Scotland) as he had experienced from his Calvinistic upbringing was untenable, and he was seeking an alternative basis for external morality. It is no exaggeration to state that Combe embraced phrenology because he saw in the new science an alternative authority based on natural laws that would prove to be infallible. Chapter six analyses how Combe's *The Constitution of Man* was essentially a 'religious' treatise proclaiming a new external morality, and it discusses how Combe's conversion to phrenology proved to be the beginning of a new religion for him. It was a form of natural religion in which nature supplanted the church as the fundamental authority for external morality. This is not to say that Combe lost his faith in God. In Combe's mind, natural laws were instituted by God, and nature was an infallible source of authority from God. His most celebrated work *The Constitution of Man* was effectively a treatise of external morality, a detailed code of 'right' conduct as deduced by him with the science of phrenology.

The third historical episode centres on the genesis of Mary Shelley's *Frankenstein* and on the moral vision the novel contains. Chapter seven examines the extent to which contemporary speculations on the cause of life and the nature of the mind influenced the conception of the novel. The novel, it is argued, was a

product of the contemporary scientific speculations of these issues. As is reflected in the novel's subtitle, *Modern Prometheus*, Mary Shelley explores the role of the scientist as the modern Prometheus, stealing the vital spark from heavens to animate a lifeless frame. In discovering the secret concerning the cause of life, Frankenstein, who was a created being, became himself a creator of life. Unlike her contemporaries like Percy Shelley and Lord Byron, who deployed the Promethean motif to glorify the potentiality of man, Mary Shelley saw in the ambition of Frankenstein to be the modern Prometheus, a chilling vision of a usurper who had trespassed some sacred limits of 'right' behaviour. In this respect, Mary Shelley's moral vision springs from her inner moral sense. Insofar her moral vision is not reducible to a code of conduct, it transcends the external sense of morality. In exploring the spiritual essence of humankind, Mary Shelley has taken the nadir of personhood as her starting point. Pieced together from deceased bodily parts, the Monster was the utmost embodiment of physiological and psychological materialism. Yet out of the Monster, forcefully and unmistakably, there emerged a spiritual being who defied to be treated as a mere object. In asserting the spiritual essence of the Monster, Mary Shelley's concern went beyond morality, in both the internal and external sense. Without any recourse to a spiritual Creator held to be responsible for making man spiritual, Mary Shelley asserted the spirituality of humankind as a sacred aspect of our personhood. To trample that spiritual aspect of our personhood is portrayed as the heroic flaw of Frankenstein – both against himself and against the Monster. The unnatural relationship between Frankenstein and his created Monster created a web of entanglements that were to destroy all natural relationships in Frankenstein's life. In exploring this web of relationships, Mary Shelley conveyed a moral vision, which went far beyond the concern of morals. In asserting the spiritual essence of man without the direct recourse to a spiritual creator, Mary Shelley has laid down the basis for a secular, humanist religion which takes as its fundamental premise the belief that man is a moral being because he is a spiritual being.

IV

This study ends with the publication of Darwin's *The Origin of Species* in 1859. Thus, the thesis begins with an important landmark in the political history for Britain

– the end of the French wars with the victory of Waterloo in June 1815 – and closes with an important watershed in British intellectual history. The years immediately after Waterloo proved to be highly significant for the protagonists in the three historical episodes. Lawrence gave his controversial lectures in 1816 and 1818, which sparked off the debates on the nature of life. It was in 1816 that Combe first attended a phrenological demonstration by Spurzheim, which led him along the path of becoming the champion of phrenology. In the summer of 1816, Mary Shelley embarked on the writing of a ghost story, which resulted in *Frankenstein*, published in 1818. The tempestuous years between the international violence of Waterloo (1815) to the domestic violence of 'Peterloo' (1819) formed the social and political background for the three episodes being studied in this thesis.

Britain had been continuously at war with France from 1793 to 1815, apart from the brief peace of Amiens in 1803. The dominant feeling after the victory of Waterloo was one of exhaustion rather than triumphalism: 'all the triumphant sensations of national glory [seemed] almost obliterated by general depression' that set in after the wars, and many people in Britain were 'simply too worn down and too weary to feel anything more than a dull relief'.[17] An economy that had been stimulated by war expenditures in excess of £75 million per annum for nearly a quarter of a century was suddenly deprived of this government spending in the summer of 1815. This plunged the whole economy into crisis.[18] From the autumn quarter of 1815 through the whole of 1816, the number of bankruptcies soared, standing at twice the level of the usual average.[19] The armament industries bottomed out, the price of iron and copper plummeted. Many factories and foundries closed down, which in turn drastically affected iron and copper mines and collieries. The labourers in other industries, from hardware and machinery, to woollen, cotton and silk, also suffered reduced hours and wages. Unemployment soared, worsened by

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[17] Linda Colley, *Britons, Forging the Nation 1707-1837* (New Haven, 1992), 321.

[18] Not to mention the American wars from 1778 to 1783, the wars with France alone for over twenty years cost Britain £1,657,854,518, approximately six times its pre-war national income. See *The Times* (12th & 18th September, 1816).

[19] *The Palmers Index to The Times Newspaper* (London, 1903), vols. 1815 – 1819, contain the listing of cases of bankruptcy published in *The Times* as an indicator of the state of economy. A summary of my reading of the index covering 1815-1819 is as follows: For the first 9 months of 1815 averaged 300-350 per quarter; it rose to near 500 cases in the last quarter of 1815. The trend continued throughout 1816 and into mid-1817, with cases of bankruptcy staying in excess of 500 for every quarter. The trend reversed back to normal in the later half of 1817 and through 1818, with cases of bankruptcy dropping to around 250-300 per quarter. Throughout 1819, bankruptcies rose again, (with the exception of the third quarter), to over 400 cases per quarter.

the influx of cheap labour from the demobilised army and navy. In every port British goods piled up or sold below cost.[20] For agriculture, the uncertainty of foreign grains during wartime had meant that heavy capital investment had been made into marginal land at home to bring it into cultivation to meet demands of a growing population; without foreign imports, the prices for home-produced grains were artificially high, and landowners were able to demand high rents. To sustain these high rents, Parliament, dominated by the landed interest, passed the Corn Law of 1815, excluding foreign corn until the price of native wheat reached the famine-level of 80s a quarter. The Corn Law fed speculation and grain prices increased, causing the price of the quarten loaf to soar from 10d to 14d between January and May 1816.[21] The situation was worsened by the disastrous harvest that followed the incessant rain during the summer of 1816. With wages dropping and food prices rising, riots broke out in the countryside and spread to industrial districts.

These were traditional bread riots precipitated by 'meal mobs' motivated by sheer economic desperation rather than by any specific political reform agenda. For instance, riots in Bideford were 'in consequence of a cargo of potatoes being about to be shipped at the quay'; a mob gathered, armed with bludgeons and other weapons, to prevent the exportation taking place.[22] In Norwich, rioters broke into mills and threw large quantities of flour into the river, demanding a wage rate of 2s per day and the fixing of the price of bread and flour. In Norfolk and Suffolk, rioters also called for a reduction in the price of bread and meat. In Cambridge, a mob of 1500, armed with sticks and iron pikes, marched under a banner inscribed 'Bread or Blood'. Similar bread riots broke out in Chippenham, Halsted, Littleport, Bury, Trowbridge, and Lambeth Marsh, with the mobs damaging property, breaking machinery, and setting fire to barns or corn-sacks.[23]

In the manufacturing districts, disturbances started with the pitmen in Tyneside and Staffordshire. In Newcastle-upon-Tyne, several hundred colliers went on strike on the ground that their wages were inadequate given the soaring price of bread and corn. Forty colliers in Bilston Moor, with three wagon-loads of coals as a

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[20] For instance, the *Morning Chronicle*, 3rd July 1816, reported an unprecedented occurrence that there was not a single entry for export and import at the London Custom House for a whole week.

[21] *The Times*, 17th May 1816.

[22] *The Times*, 23rd May 1816.

[23] See reporting in *The Times*, 25th April, 16th, 17th and 18th, 23rd & 30th May and 9th November 1816; *Scots Magazine* 78 (1816): 470, and A.J. Peacock, *Bread or Blood – The Agrarian Riots in East Anglia* (London, 1965).

present, proceeded at a rate of twelve miles per day to London in order to petition the Prince Regent in person. Subsequent disturbances were less peaceful. Desperate Irish slum-dwellers from the deprived Calton district of Glasgow attacked the soup kitchen that had been set up by the civic authorities, and the proceeded to wreck nearby steam-loom machinery; the military force called in by the Sheriff was attacked with showers of stones and brick-bats from the local rooftops.[24] In the northern Lancashire town of Preston, weavers and Welsh iron moulders attacked shops and factories; and the employees of Tredegar ironworks in Wales marched to stop the blast furnaces.[25] The destruction to machines caused during these riots was reminiscent of the organized machine-breaking in the years 1810-11, known as Luddism; and 'there was a strong suspicion in 1816 that the Luddite gangs were directed by some form of union committee'.[26]

These disturbances of the summer of 1816, uncoordinated and scattered around the country, with mobs of at most a few hundred strong, were different in nature and magnitude from the mass gathering planned for 2nd December in Spa Fields, London. Some extremists came with arms and apparently plotted to seize the city of London, take the Tower and free the prisoners. Five thousand handbills, bearing the slogan 'Britons to Arms', were distributed in and around London; they exhorted people to wait the signal from London to fly to arms:

> Haste, break open Gunsmiths and other likely places to find Arms! Run all constables who touch a man of us; no rise of Bread; no Regent; no Castlereagh, off with their heads; no Placemen, Tythes, or Enclosures; no Taxes; no Bishops, only useless lumber! Stand true, or be Slaves for ever.[27]

In the event, the number of those expected to join the insurgents was relatively small, and no attempt was made to force the Tower. Henry Hunt, the oratorical champion of the radical movement, was arrested bearing with him the insignia of the French Revolution – a pike, a cap of liberty and a tricolour flag. Despite its failure, the threatened assault on the Tower reminded the authorities of the storming of the Bastille in 1789 in Paris. Parliament appointed a Select Committee to enquire into the unrest. Its report in February 1817 concentrated on the activities of the

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[24] *Scots Magazine*, 78 (1816): 549.

[25] See *The Times*, 6th August 1816, and *Scots Magazine*, 78 (1816): 549 & 633.

[26] Norman Gash, *Aristocracy and People,* (The New History of England, 8, London, 1979), 85.

[27] *Reports of Select Committees*, 34 (1817), part iv, 1.

Spenceans.[28] The Committee was one of a number of measures taken by Pitt's Government against the threat of Jacobinism.[29] The Government also used agents to provoke seditious acts within radical groups, and the reports of such agents probably created an exaggerated sense of a national conspiracy against the established social and political order.[30] The distress of 1816, though economic in nature, led to further repressive political measures in March 1817 to control the activities of secret clubs and societies. These were largely confined to the lower classes and to the industrial districts like Manchester, Glasgow and Paisley.[31]

The disturbances in 1816 conjured up images of the French Revolution. As one historian has remarked, 'the French Revolution produced among most propertied Englishmen a peculiar fear of mob violence'. The intensity of this fear was unprecedented; 'every minor riot reminded orderly citizens of the excesses of the French'.[32] The non-existence of a civilian police aggravated the political and social unrest, and was a direct cause of the 'Peterloo' tragedy.[33] On 16 August, 1819, some 50,000-60,000 men, women and children converged upon St. Peter's Field in Manchester for a meeting called 'to consider the propriety of adopting the most legal

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[28] The *Spenceans*, according to the report, assumed the title 'in consequence of having revived the pirnciples, with some variation, of a visionary writer of the name of *Spence*'. *Reports of Select Committees*, 34 (1817), part iv, 1. The Spenceans were followers of the semi-socialist, Thomas Spence, who advocated land nationalization amongst other things, and whose influence survived his death in 1814.

[29] Ever since the Revolutionary wars with France started in 1793, the British Government under Pitt's first administration (1783 – 1801) had intensified their control over organisations like the workers' combinations, trade associations, dissenters' meetings and reform societies. For instance, two Parliamentary Acts in 1795 made it possible to bring prosecutions of treason on the basis of one's speech or writings, and to forbid all large public meetings without special permit. In 1796, the increase in stamp duties on newspapers and the introduction of registration of printing presses tightened the government's control over the press.

[30] The Select Committee of Secrecy was formed to report on seditious practices within the country. The activities of the Society for Constitutional Information, the Corresponding Society (both based in London), and those of British Convention and Friends of People in Edinburgh were exclusively reported on. For instance, the lengthy Second Report from the Committee of Secrecy to the House of Commons, 6th June, 1794, concerned the procurement of arms (either muskets or pikes) as a frequent subject for the Corresponding Society. See *Parliamentary History*, 31 (1794 –1795), 688 –886.

[31] The new measures legislated in March 1817 included: licensing of rooms used for public meetings, a prohibition on federations of societies and meetings over fifty persons without magistrates' permission, dissolution of the Spencean societies, suspension of *habeas corpus* for persons arrested on charges of treason, and the death penalty for inciting members of the armed forces to mutiny. See Norman Gash, *Aristocracy and People, Britain 1815-1865* (London, 1979), 91.

[32] Sir Llewellyn Woodward, *The Age of Reform, 1815-1870* (Oxford, 1938), 20.

[33] In 1829, Peel set up the new police in London, blue-coated, with top hats and trucheons. It saved the capital during the Reform Bill agitation in 1831 from the radical mobs which troubled Bristol and other towns. The corps were later extended to other areas of Britain.

and effectual means of obtaining a reform'.[34] Henry Hunt was to be the principal speaker. He desired the meeting to be the largest assemblage ever seen in the country and asked for notices to be published in the *Manchester Observer* and London papers. Unlike the Spa Fields meeting in December 1816, in which arms were involved, the leaders of St. Peter's Field meeting stressed that the meeting would only be morally effective if it were legal and peaceful. However, a select committee of magistrates from Lancashire and Cheshire, set up in July 1819, was in charge of the military and civil power at 'Peterloo', and they 'felt a decided conviction that the whole bore the appearance of insurrection'.[35] The Manchester yeomanry and the Hussars, who had concealed themselves from the procession, moved in soon after Hunt began his speech. The leaders were arrested under warrants, and the crowd of 60,000 was dispersed in some ten minutes. The speed of the dispersal brought its casualties: eleven deaths, and 140 wounded, the majority being women and children. Demands for parliamentary enquiry were rejected. Instead, more repressive measures were legislated. In November 1820, Parliament passed the notorious Six Acts, intended to strengthen the laws concerning public meetings and to curb the radical press.[36] The last Act, which imposed a four-penny stamp on all periodical publications, was intended to kill radical newspapers like Cobbett's *Political Register* and Wooler's *Black Dwarf*.

The shedding of blood at St. Peter's Field aroused indignation and outrage within all social ranks and orders in Britain. The *Manchester Observer* coined the soubriquet 'Peterloo', in bitter mockery of the feat of the British arms at Waterloo. Among the working-class reformers, factions were forming after Peterloo, with Hunt's followers inclining to peaceful courses, and supporters of Arthur Thistlewood advocating a resort to arms. In February 1820, a gang of twenty led by Thistlewood plotted to murder the whole cabinet. The conspirators were exposed by a government spy and arrested during a meeting at Cato Street, and they were executed.

The news of the 'Peterloo' massacre reached the Shelleys, who were residing

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[34] Orator Hunt, who was to preside the meeting, claimed 150,000, and the *Annual Register* gave 80,000; the chairman of the committee of magistrates, gave the total of 50,000-60,000, *State Trial*, 1819:255. See Donald Read, *Peterloo – The Massacre and the Background* (London, 1958) footnote 3, 131, and for a detailed account of the event.

[35] Read, *op. cit.*, 127.

[36] The Six Acts concerned: 1. Training Prevention; 2. Seizure of Arms; 3. Misdemeanours; 4. Seditious Meetings Prevention; 5. Blasphemous and Seditious Libels; 6. Stamp Duites.

in Italy. Mary Shelley described how the news 'roused in [Percy] violent emotions of indignation and compassion', and the sonnet 'England in 1819' was a direct expression of such emotions:

> Rulers who neither see, nor feel, nor know,
> But leech-like to their fainting country cling,
> Till they drop, blind in blood, without a blow, --
> A people starved and stabbed in the untilled field,--
> An army, which liberticide and prey
> Religion Christless, Godless – a book sealed. [37]

The government between 1816 and 1820, which put through repressive measures to control the 'masses' was by no means representative of the whole period under study. After 1822 the anti-Jacobin tide at last began to ebb. With Peel at the Home Office, repression was eased, and a climate of liberal Tory reform gradually emerged. In 1824-5, the House of Commons was induced by the skilled lobbying of the Radicals, Joseph Hume and Francis Place, to repeal Pitt's Combination Act of 1800, and thus to make trades unions legal under certain conditions. More significant legislation was to follow. The Repeal of the Test and Corporation Acts in 1828, Catholic Emancipation in 1829, and the Reform Act of 1832, were to effect a constitutional change of near revolutionary impact.

In the period in which the Lawrence controversy flared up, the mood of the government was still dominated by anti-Jacobinism of the wartime period. Although the French wars had finished, there was no guarantee in the period of post-war depression that Britain would not experience a revolution. George III, 'an old, mad, blind, despised, and dying king', as Shelley described him, was on the throne, and the Prince Regent, capricious and dissipated, was estranged from his German wife Caroline, exiled on the continent and a constant source of scandals. Princess Charlotte, the only legitimate grandchild of George III and a brighter hope for the monarchy, died in childbirth in 1817. The death of George III in 1820 brought on the Queen's Trial, when the sexual behaviour of Caroline was scrutinised and her role as the King's Consort was contested. The precarious state of the monarchy weakened the confidence of the governing elite. Between 1790 and 1820, nineteen Members of Parliament committed suicide, and more than twenty lapsed into insanity. The strain on a governing elite haunted by fear that the masses would rise

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[37] Roger Ingpen, *The Letters of Percy Bysshe Shelley* (London, 1914), II:716, quoting Mary Shelley. *England in 1819* and the 91-stanza narrative poem *The Mask of Anarchy* were both written in response to 'Peterloo', though published posthumously in 1832 and 1839 respectively.

up should not be under-estimated. As Linda Colley suggests, 'the most corrosive challenge to patrician confidence and authority' in these thirty years might not have been 'the wars with Revolutionary America and France, or the exotic demands and seductions of a new, predominantly eastern empire, or even the pace of administrative and industrial change at home, but rather a calling into question of the very legitimacy of the power elite'.[38]

Norman Gash has argued, what made the immediate post-Waterloo period so difficult was not one but a combination of problems, including industrialization, the great post-war slump in trade and manufacture, the unprecedented expansion of population, and the increasing urbanization.[39] The economic life of Britain in 1815 was in such a state that Élie Halévy has famously observed that 'if economic facts explain the course taken by the human race in its progress, the England of the nineteenth century was surely, above all other countries, destined to revolution, both political and religious'.[40] But it was not to be so. What kept a revolution at bay in Britain then? It was not the political institutions, which Halévy describes as 'essentially unstable and wanting in order', but 'beliefs' – of which religion formed the most crucial part.

Edmund Burke, who provided the chief conservative antidote to the radical writings of Thomas Paine and William Godwin, offered a succinct summary in his *Reflections* of the essential beliefs of the British people in the early 1790s, ideas that would later help to ease the volatile domestic situation of 1816-1820 and the Chartist unrest of the late 1830s and 1840s from taking a revolutionary course:

> Nothing is more certain, than that our manners, our civilization, and all the good things which are connected with manners, and with civilization, have, in the European world of ours, depended for ages upon two principles; and were indeed the result of both combined; I mean the spirit of a gentleman, and the spirit of religion.[41]

In Burke's assessment, the spirit of the gentleman and the spirit of religion were the principles that had preserved Britain as the bastion of good sense against the seductions of revolutionary France. These principles prevailed into the pre-

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[38] Colley, *op. cit.*, 152.

[39] Gash, *op. cit.*, 2.

[40] Élie Halévy, *A History of the English People*, 3 vols. (1924, Harmondsworth, 1937), II: 236.

[41] Edmund Burke, *Reflections on the Revolution in France* (1790, Harmondsowrth, 1968), 173.

Darwinian period, and were to the fore in shaping the responses to the scientific ideas of Lawrence and Combe, and will be discussed in turn briefly here.

In discussing the spirit of religion during this period, the three most relevant components were: the idea of Providence, Evangelicalism and Methodism. An abiding belief in Providence helped to provide a divine sanction for government, a sense 'that the law of God enjoins obedience to every government settled according to the constitution of the country in which it subsists'.[42] Dynastic legitimacy, the authority of the king's government, Whig or Tory, and indeed the social hierarchy as a whole existed with divine sanction.[43] The idea of Providence helped the British people to accept that 'particular kind of trials, at the hands of particular kinds of enemies, were the necessary fate and the eventual salvation of a chosen people'.[44] The latest French wars were interpreted as trials from Providence, and the victory over Napoleon demonstrated God's special care for His chosen people – Protestant Britain had won over Catholic as well as revolutionary France.[45] The ceremony of Lodging the Eagles on 18 January 1816 was the only state ceremony to mark the victory of Waterloo. This date was also appointed as the day for 'General Thanksgiving to Divine Providence on the re-establishment of peace in Europe'. The significance of the ceremony of lodging the eagles (taken from the French at the battle of Waterloo) was to deposit 'in a Christian Temple the tokens of victory, and dedicating to the God of Battles, the memorials of a triumph'.[46] The ceremony concluded with the playing of 'God save the King', and the whole congregation stood – a powerful expression of patriotism in which Providence and victory, nation and monarch, were fused in the ceremonial grandeur.

It was not only during state ceremonies that belief in Providence found expression. The extraordinary weather in the summer of 1816 – six weeks of

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[42] J.C.D. Clark, *English Society 1688-1832* (Cambridge, 1985), 225, quoting Bishop George Horne, Discourse XXXII 'The Duty of Praying for Governors', preached in Canterbury Cathedral on the anniversary of George III's accession, 25th October 1788.

[43] See J.C.D. Clark, *op. cit.*, 218-225, for interesting discussions on how eighteenth century was to defend the intellectual viability of the idea of Providence, an active divine sanction for particular governments, against the interpretation which Arians, Socinians and Deists wished to place on Newtonian physics: that God, like a watchmaker, having created the universe, stood back to allow it to run according to its unvarying natural laws.

[44] Colley, *op. cit.*, 28.

[45] See Colley, *op.* cit., chapter one on how Protestantism was an important aspect in forging the identity of Britain as a nation.

[46] *The Times*, 19th January 1816, page 3, column b.

incessant rain and cold weather all over the country, hail storms accompanied by hurricane force of wind and floods affected Stafford, Norton, Lichfield and Carlile, and minor earthquakes reported in many parts of England in March, and then in Scotland in August – were regarded by some as visitations of Providence. An eye-witness of the earthquake in Aberdeen, which caused extensive damage to property but no loss of lives, referred to the shock as an 'awful and unusual visitation of Providence'. An account from Longpark, near Lichfield, referred to the hail storm as 'the most tremendous visitation of nature ever felt in that neighbourhood'.[47] In face of natural calamities, Providence was invoked to encourage fortitude, as one contributor to *The Times* exhorted:

> Providence sends moments of distress to try how we shall conduct ourselves in the discharge of our reciprocal duties. The community suffers but the different classes encourage and assist each other in endurance.[48]

The idea of Providence was prominent not only in those post-Waterloo years, but during the cholera epidemic of 1831-2. An official day of fasting, prayer and humiliation was appointed for 21 March 1832, which was to be a day of communal confession. The epidemic was interpreted by many as a visitation form Providence to recall people to religion. In the words of Bishop Blomfield preaching to his Royal audience on that day from the book of Isaiah, 'When Thy judgments are in the earth, the inhabitants of the earth will learn righteousness'.[49] Others interpreted the epidemic as a divine pronouncement against science, as a conflict caused by the 'cold and dreary materialism' of the men who were investigating scientific laws and had ignored 'the principles of God's moral government'.[50] It was the idea of Providence that turned the British people to religion in the face of calamities.

While the idea of Providence emphasised the work of an active God, who guides the affairs of His people, Evangelicalism placed its emphasis on the individual

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[47] See *The Times*, 23rd, 25th, 26th March 1816, for accounts of earthquake in England, for example, in Bawtry, Blyth, Carlton, Sheffield, Chesterfield, Mansfield, Nottingham, Lincoln, Leicester, Loughborough and Gainsborough; see 21st, 23rd and 27th August for accounts in Scotland: Morays, Banff, Aberdeen, Kincardine, Forfar, Perth and Fife; see 30th and 31st July for storms and floods. Also see *Scots Magazine* , 78 (1816), August issue for accounts of earthquakes in Scotland and weather on the Continent.

[48] *The Times*, 9th November 1816.

[49] George Edward Biber, *Bishop Blomfield and His Times* (London, 1857), 129-34, quoted in R. J. Morris, *Cholera 1832* (Croom Helm Social History, London, 1976), 148.

[50] *Congregational Magazine*, vol. 15, March 1832, quoted in R. J. Morris, *Cholera 1832* (London, 1976), 139.

soul, which was to be saved through the acceptance of Christ's atoning sacrifice. In 1739, John and Charles Wesley, and George Whitefield began to preach the evangelical gospel (that salvation of the soul was through a personal conversion) and contributed to a major religious movement that swept across Britain, and indeed the North Atlantic world, in the eighteenth century. The Evangelical faith 'emphasized a heartfelt, Bible-centred gospel message, aimed at eliciting a personal decision for Christ'.[51] The followers of Wesley and Whitefield became known as the Methodists, and they sought to remain within the structures of the established Church until their break with the Anglican Church in 1791; even after this break, many Methodists continued to attend some services in their parish church. Through the pattern of itinerary preaching, the Methodists reached out to the mass of largely unchurched humanity in the factories and mines, in the mills and the fields. Halévy described the power of the Evangelical religion as the chief influence that prevented Britain from experiencing revolutionary upheaval during this period of economic trials and social neglect. The hopes of the lower orders in society usually lay in either Evangelical religion or Radical politics. Sometimes the two conjoined, for many Nonconformist preachers preached fundamental political reform as well. However, on the whole, the force of Methodism was welded to the political conservatism of John Wesley. The evangelicals who stayed within the established Church came under the leadership of the Evangelical party, which emphasized personal piety and social action and was a chief force in promoting liberalism in politics. One of such distinguished evangelical leaders was William Wilberforce, whose fervent evangelical faith was as important in the campaign that led to the abolition of slavery in Britain in 1834 as was his adroit statesmanship. Amongst the middle-class evangelicals, a distinctive piety developed, which 'fostered new concepts of public probity and national honour, based on ideals of oeconomy, frugality, professionalism, and financial rectitude'.[52] Both Methodism and Evangelicalism inherited 'almost intact the political theology of mainstream Anglicanism'. J.C.D. Clark points out that 'the desire of the new movements to establish their respectability, to shield their innovations from criticism, often led them to emphasise this political orthodoxy, and even to represent themselves as more orthodox than the

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[51] Stewart J. Brown, *The National Churches of England, Ireland, and Scotland, 1801-1846* (Oxford, 2001), 37.

[52] Boyd Hilton, *The Age of Atonement – The Influence of Evangelicalism on Social and Economic Thought 1785-1865* (Oxford, 1988), 7.

orthodox'.[53] A powerful force for mobilising the religious beliefs of the higher orders (through the Evangelical party within the Anglican Church), and of the lower orders (through the field work and itinerary preaching of Methodism), was thus harnessed to reinforce the political and social structures of Britain in the first half of the nineteenth century. The centrality of the human soul in the Evangelical faith will be essential for understanding the controversies being discussed in this thesis.

Finally, along with the spirit of religion, the ideal of the 'gentleman' had been named by Burke as one of the two main principles preserving Britain from sliding into revolution. The example of William Cobbett in some senses supports Burke's diagnosis. William Cobbett was essentially a *gentleman* farmer, and the ideal of the gentleman meant that Cobbett sought to direct rural disaffection into parliamentary reform and not revolution. The aspiration to imbibe this ideal of the gentlemen was translated during the first half of the nineteenth century into a spirit of self-improvement among the lower and middle classes in Britain. On one level, the huge popularity of George Combe's *The Constitution of Man* was a precursor to Samuel Smiles' *Self- Help*, published in the same year as Darwin's *The Origin of the Species*. The spirit of self-improvement characterised Combe's own endeavours as he elevated his social status from the son of a brewer to that of a Writer to the Signet. Combe used phrenology to preach the gospel of self-improvement, and his audience, the new generation of working men who were educating themselves to be mechanics and engineers, imbibed this spirit of self-help. The popularity of phrenology fitted into the 'general awareness of the importance of science in the intellectual life of the nation ... at progressively lower levels of the social order'.[54] Combe himself wrote extensively on educational reform to emphasise the importance of a scientific component in the general education for the masses. Up and down the country, philosophical societies, halls of science, mechanics' institutes, and workers' associations sprang up for the dissemination of science to the middle and lower orders of society. It was in this respect that Henry Cockburn, the Whig Edinburgh lawyer remarked on the new establishment set up in 1832, called 'The Edinburgh Association for procuring Instruction in Useful and Entertaining Science':

> This and similar institutions are strongly characteristic of the times. It is a sort of popular endowed college, where lectures are given to all,

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[53] Clark, *op. cit.*, 235-6.

[54] J.D. Yule, 'The Impact of Science on British Religious Thought in the Second Quarter of the Nineteenth Century' (University of Cambridge, D. Phil., 1976), 26.

> male or female ... The lectures are on botany, geology, chemistry, astronomy, physiology, natural philosophy, phrenology, and education. It is a very useful establishment, giving respectable discourses very cheaply to a class of persons for whose scientific instruction and amusement there is no other provision ... George Combe is their genius, and consequently phrenology is a favourite and most productive branch. ... it is gratifying to see hundreds of clerks and shopkeepers, with their wives and daughters, nibbling at the teats of science.[55]

The efforts of the working classes at self-education through this kind of scientific instruction were to diminish the anti-Jacobin fears of the previous generation. On the one hand, it was the social utility of phrenology in this regard that marked its widespread acceptance, not only by the populace, but also by the established order. On the other hand, the potential for new scientific ideas to be deployed to further the cause of radical politics, as in the Lawrence controversy, in the immediate years after the victory of Waterloo was a genuine concern. Through the study of the three episodes revolving round William Lawrence, George Combe, and the genesis of Mary Shelley's *Frankenstein*, one of the aims of this thesis is to explore how the social and political climate of the time influenced the reception of scientific ideas.

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[55] Henry Cockburn, *Journal of Henry Cockburn, 1831-1854*, 2 vols. (Edinburgh, 1874), 73-4.

Materiality, Mortality, and Morality

> The great difference between mankind and the inferior animals consist in their having immortal souls. The soul is that part of a human creature which thinks. You wish me to describe the Soul to you, Henry; this, my dear, I cannot do, any farther than that it is of a spiritual nature, and consequently invisible, for a spirit has not bodily parts, and therefore cannot be seen with the eyes; but I am convinced that I have a Soul by what passes within myself, and that human creatures have Souls by what I observe in other people ... And it is by means of the Soul, my dear children, that mankind are capable of knowing God, and of paying that tribute of prayer and praise which is due to the great CREATOR.
>
> I told you, my dears, that the Soul is immortal, and so it certainly is, it will live for ever; the Body is condemned to die, but the Soul will remain alive to everlasting ages. Every human creature dies sooner or later; the Soul leaves the Body, and the Body turns to corruption, but the Soul cannot die, for the CREATOR has said it shall live.
>
> Mrs Sarah Trimmer, 1741-1810[1]

When the first edition of Mrs Trimmer's *Easy Introduction to the Knowledge of Nature and Reading the Holy Scriptures, adapted to the Capacities of Children* appeared in 1780, Louis XVI had been six years on the throne. Nobody foresaw the French Revolution that would eventually condemn the French king to the guillotine, or a Napoleon whose territorial ambition drove him well beyond the bounds of French soil. When the fifteenth edition of *Easy Introduction* was published in 1817 with 'considerable Additions and Improvements', numerous battles had been fought between Britain and France; the European map had been drawn and re-drawn, and a new balance of power was in place to put France in check. The fifteenth edition of *Easy Introduction* would suggest that its popularity not only had not waned over those thirty-seven years, but might have surged in the reactionary climate in the aftermath of the French Revolution and Napoleonic wars. The first edition of *Easy Introduction* was dedicated to Lady Charlotte, who with young Henry, were charges to Mrs Trimmer, their governess. The first and subsequent generations of children brought up to believe in what Mrs Trimmer taught of the Body, the Mind, and the Soul were in their prime by 1817, and some were leaders in society: Lords of the

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[1] Sarah Trimmer, *Easy Introduction to the Knowledge of Nature and Reading the Holy Scriptures, adapted to the Capacities of Children* (London, 1817), 168.

Upper House and members of Parliament, squires in the country, gentlemen of professions, and the Reverends in their parishes. The genteel ladies like Lady Charlotte, would be their spouses, mistresses of their households, and mothers of their offspring. The contemporaries of Lady Charlotte and Henry would not only have received the teaching of *Easy Introduction* as children themselves, but would probably have instructed their children to read it. The quoted passage from *Easy Introduction* would be a fair representation of what the majority of the upper and middle classes were taught to believe of the Body, the Mind, and the Soul at the end of the Napoleonic era.

The beliefs embodied in Mrs Trimmer's passage can be summarised as: (1) the soul is of a spiritual, immaterial nature, and therefore distinct from the material body; (2) at death, the soul leaves the body; being of matter, the body is subject to corruption; while the immaterial soul will live for ever; (3) the soul thinks; and it is the thinking soul[2] which distinguishes mankind from the animals, making mankind rational and moral creatures, capable of knowing God. It was a belief system which, by denoting the nature of the body and the soul, affirmed the basis of a future life, and prescribed the conduct of the present life. In other words, these beliefs addressed issues pertaining to *Materiality*, *Mortality*, and *Morality*. If materiality is a philosophical concept, mortality a religious concern, and morality a social necessity; the three were nonetheless inextricably connected. A sermon on the parable of the Prodigal Son, delivered by the celebrated Episcopalian preacher Archibald Alison in 1816, illustrated the way these three aspects of belief intertwined.[3] After enumerating the consequences of 'vice', and 'the indelible expectation of punishment', the preacher asked the rhetorical questions:

> Is it then the final termination of our weak and fallen nature? Is the immortal mind of man so soon to lose all its hope of glory and honour?

On saying 'No' to these questions, on the grounds that there was a Father in the parable, symbolising designs of divine mercy and salvation over evils, the preacher exhorted the congregation with the following words:

> Let the young pause ... it is only while the mind retains its strength, and the soul its vigour, that the prodigal child of nature can arise from

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[2] In the period of discussion, between1780-1830, there was much fluidity in the usage of 'mind' and 'soul'. Thinking was not exclusive to the mind or immortality to the soul; hence the phrases 'the thinking soul', or 'the immortal mind', were common.

[3] *Scots Magazine*, 78 (1816), 287-289; italics mine.

the dust into which he has fallen.

'Nature' here pertained to materiality, the 'fallen' part of man which originated from the dust; the hope of immortality and glory was for the mind and the soul; and the certainty of a future state of retribution was a persistent reminder of the need for godly conduct in this life. Like the legs of a tripod, the three aspects of this belief system concerning materiality, mortality and morality, supported and reinforced one another; an attempt to undermine any one of the three would be an attempt to topple the whole system.

In Britain, towards the end of the eighteenth century, new challenges did come to bear on this mainstream religious belief system as represented by Mrs Trimmer's teaching. The influence of French philosophy of the late eighteenth century was one of the factors very much guarded against by the British. From science, the advances in physiological studies, and the rise of phrenology, were two examples whereby a materialistic conception of life and the mind prevailed. In religion, the writings by dissenters like Joseph Priestley, and Richard Price, challenged the conventional view of immortality based on an immaterial soul. In politics, the surge of seminal British thinkers such as Thomas Paine, William Godwin, and Mary Wollstonecraft collectively called into question the *status quo* and proffered a new order of morality for society.

By demonstrating how tightly the philosophical aspects of each of the three entities were related to the religious concern for immortality, and the social necessity for morality, this chapter provides the intellectual background to the debates on life and the mind in the early nineteenth century. The central argument of this thesis is that the controversies revolving around the philosophical foundations of the mind and the soul in the early nineteenth century were ultimately driven by the concern for a secure basis for morality. This chapter seeks to establish the interconnectedness of immateriality of the soul, with the hopes of immortality, and the religious basis of morality. It is because the three aspects of the beliefs were so intertwined that to challenge the philosophical concept of immateriality would be to challenge orthodoxy in religion, and in turn, undermine the accepted foundation for morality.

II

Samuel Coleridge made a remark in 1830 which is of more than passing interest to this section of the thesis. He coined the famous phrase, 'Two Classes of Men' by stating that 'every man is born an Aristotelian or a Platonist'. He thought it was impossible that any one born an Aristotelian could become a Platonist, and *vice versa*, and besides these two classes, it was next to impossible to conceive of a third.[4] Much has been written on the differences between Plato and Aristotle. By way of summary, their differences can be ascribed to the fact that Plato is an idealist, and Aristotle, an empiricist. For Plato, ideas are innate; truth is to be apprehended by intuition through revelation. For Aristotle, there is no knowledge without an external material world; ideas cannot be innate; and the apprehension of truth is by sense perceptions through reason. For Plato, the visible physical world is a poor image of the invisible world of Ideal Universals. The visible world is bound within a temporal space in which things are finite and changeable, while the invisible world of Ideal Universals is outside the temporal frame, it is eternal and immutable. For Aristotle, the visible world is all that we have, and the universals are immanent in the material world. For Plato, changes are viewed negatively as mutations and as a reflection of the finite world. For Aristotle, change and development are viewed positively as a law of life, as the dynamics of nature, for the fulfilment of a fruitful end, its *teleos*. For Plato, truth is transcendent; for Aristotle, truth is immanent.

An article in 1815, published in the conservative, evangelical periodical, *Edinburgh Christian Instructor* stated that 'it had indeed been the general opinion of mankind in all ages, that man is a compound being, formed by the union of two distinct substances, *matter* and *mind*'.[5] The article was asserting a dualistic tradition in western civilization which owes its root to the philosophy of Plato (427-347 B.C.). At the heart of Platonism is the idea that the material world is a (poor) image of an ideal world where Forms exist in their timeless perfection. Matter, being susceptible to changes, is therefore intrinsically corruptible and less than perfect. In its more

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[4] S.T.Coleridge, *Specimens of the Table Talk,* 2nd July 1830; quoted in David Newson, *Two Classes of Men* (Oxford, 1972), 7.

[5] Anon., 'On the Immortality of the Soul,' *The Edinburgh Christian Instructor*, 11(1815): 155-160, 156.

extreme form, matter for some Platonists is held accountable for the existence of evil. Another article in the *Edinburgh Christian Instructor* related the origin of evil within Platonism as:

> The Platonist accounted for the existence of evil, from what they called the essential corruption of matter. Matter they supposed to be naturally and inherently evil. Accordingly, the human body, being composed of matter, must be evil; and its close connection with the soul must tend to its pollution. Besides, the material system with which we are connected being inherently corrupt, evil, both moral and physical, cannot fail to abound.[6]

Changes are considered seeds of evil; the essential corruptibility of matter renders matter therefore inherently evil. The body, being of matter, is corruptible and inherently evil. From the manuscript of a deceased clergyman, death was described as 'the end' which would 'produce a great change upon our body':

> ... it will be dissolved in the dust. We must, 'Say to the Worm, thou art my sister; and to corruption, thou art my mother.[7]

If the material body is essentially corruptible, the need for dualism becomes paramount – it is only by distinguishing an immaterial part in his make-up that man stands a chance of transcending the inevitable fate of decay associated with matter. To affirm an immaterial part in man becomes also the *sine qua non* for any possible salvation from the realm of evil matter. In Plato's scheme, only the mind, by dint of its divine origin, is immaterial and therefore incorruptible. An article 'On Death' in the *Edinburgh Christian Instructor* in 1815 emphasized the lowly status of the body:

> Soon the soul and body ... must separate – the spirit winging its way to future worlds – but the body left a lifeless loathsome mass of putrefaction, ... became the food of worms, and mingle with the clods of the valley.[8]

By contrast, the mind's divine origin represented the basis for immortality because:

> [God] is the Father of this rational and immortal mind, whose wondrous faculties raise me so far above the level of the brutal tribes; how strongly, then, am I bound to serve Him with my body and with my spirit, which are not so much mine but his.[9]

The essential dualism in for the conception of the body, the mind, and the

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[6] Anon. 'On the Origin of Evil', *The Edinburgh Christian Instructor*, 10 (1815), 153-158, 153.

[7] Practical Sermons No.25 by a deceased clergyman on Psalm xxxix 4, *The Edinburgh Christian Instructor*, 10(1815), 25-37.

[8] Practical Sermon No. 26, 'On Death', in *The Edinburgh Christian Instructor*, 10 (1815): 97-103.

[9] Ibid., 102.

soul is, to a large extent, the legacy of Plato's creation narrative, the *Timaeus*,. It was the first of Plato's works available in Latin, translated by Chalcidus around AD350 'principally because the neo-Platonists believed [*Timaeus*] to be a religious tract' because of its many parallels with *Genesis.*[10] Plato's influence on Latin Christianity remained largely unchallenged until the re-discovery of Aristotle (384-322B.C.) in the twelfth century. Though a near contemporary to Plato, Aristotle's writings were not circulated in the Latin West until around 1100. Despite being Plato's erstwhile pupil, the master and pupil became rivals in their respective schools of thought, epitomised by Aristotle's founding of the Lyceum in Athens to rival the Academy of Plato. Their different approach to knowledge is exemplified in their views on the life-matter problem. Aristotle's *De Anima* is his treatise on this problem, and a critique of *Timaeus.*[11] Aristotle summarises rival theories of the soul as characterised by three features: the production of movement, perception and incorporeality. Aristotle comments that there is 'one absurdity' in common with all these theories about the soul, namely:

> The soul is connected with the body, and inserted into it, but no further account is given of the reason for this, or of the condition that the body is in. Yet this would seem to be required. For it is by partnership that the body acts and the soul is affected, that the body comes to be moved and the soul produces motion. And none of these is possible for things whose mutual connection is contingent. But most theories only try to say what sort of thing the soul is, making no further specifications at all about the recipient body.[12]

The incorporeality of the soul, and therefore the need to have two natures to denote the body and the soul, renders their mutual connection contingent. And this 'contingent connection', for Aristotle, is a chief obstacle for dualism. For Aristotle, all matter is 'enformed'; and 'to think of something as matter is to think of it as the matter of some kind of thing which by some definite process could be turned into that sort of thing'.[13] A living body is 'enformed' to exhibit life; life is the essence of animate bodies. The 'Soul', for Aristotle, is a particular form of essence; it is the

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[10]C.U.M. Smith, *The Problem of Life* (London, 1976), 60

[11] *De Anima* only became available to the Latin West between 1100 to 1270, when most of the Aristotelian corpus was translated from Arabic and Greek. The only text by Aristotle known before the twelfth century is *Logica Vetus*, translated by Boethius from Greek in Italy in the 6th century. See A.C. Crombie, *op.cit.*, 55-60.

[12] Aristotle, *De Anima*, tr. Hugh Lawson-Tancred (Harmondsworth, 1986), I: iii, 143.

[13] Michael Frede, 'On Aristotle's Conception of the Soul', in Martha C. Nussbaum and Amelia Oksenberg Rorty (eds.), *Essays on Aristotle's De Anima* (Oxford, 1992), 93-107.

essence of animate bodies. For Aristotle, animate bodies are not matter with something additional to animate it; being alive is the essence of the living bodies. In this regard, Aristotle certainly would not maintain the separateness of the soul from the body.

If Plato was the source of mind-body dualism, it was another rationalist philosopher who was to bring dualism to a crisis. The founder of the mechanical philosophy, René Descartes (1596-1650) was to make body and mind so categorically distinct that it became easy for subsequent thinkers to dismiss the relevance of Descartes' immaterial principle. Mathematics was at the centre of the Cartesian philosophy, and the whole of physics and physiology were expounded in mechanical terms, which were in turn further explained in geometrical ideas. In his *Treatise of Man*, Descartes declared that his subject was not *Man* but a *Machine*, not a real one, but a hypothetical one such as God might have made. For instance, the heart was likened to an engine in which God kindled 'a non-luminous fire', just like that which caused 'damp hay to heat up when enclosed'. The lungs functioned as a kind of condenser.

Descartes' mechanical philosophy resulted in 'a new concept of living creatures as *bêtes-machines*, which always acted in strict accordance with the laws of mechanics'.[14] Descartes' view on the motion of the heart illustrates this point:

> This motion [of the heart], ... follows as necessarily from the very disposition of the organs [etc] ... as does the motion of a clock from the power, the situation and the form of its counterpoise and of its wheels.[15]

In the closing paragraph of his *Treatise on Man,* Descartes reiterated the same claim more generally:

> ... all the functions that I have attributed to this machine ... imitate as perfectly as possible those of a real man; I desire, I say, that you should consider that all these functions follow quite naturally solely from the arrangements of its parts neither more nor less than do the movements of a clock or other automaton from that of its counterweights and wheels.[16]

By drawing parallels between the physiological organs and mechanical devices like mills, clocks, pumps, looms and fountains, Descartes put aside the question regarding

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[14] John Henry, *The Scientific Revolution and the Origins of Modern Science* (New York, 1997), 81.

[15] Descartes, *Discourse on Method,* tr. F.E. Sutcliffe (1637, Harmondsworth, 1968), part 5.

[16] Descartes, *Treatise on Man*, Part 5, 169 in S. Gankroger (ed.), *Descartes, The World and other Writings* (Cambridge, 1998).

how matter comes alive by focusing instead on the structure of living matter.

Descartes' mechanistic account of living processes proved immensely influential, but it was hard to see how it could account for generation and development. How could an undifferentiated seed develop into a tree, with roots, bark, wood, sap, leaves, and flowers? From where did the embryo emerge, and how did it develop into a fetus, and then into a baby? The only viable solution seemed to be the assumption that development, like life itself, was merely an illusion. Just as the animal was really a machine, so the seed was merely a miniaturised version of the machine. The tree, with all its different parts, was already present in the seed; the embryo was a miniature adult, with all the features of the adult form compressed into its shape. There was now no need to explain how the development of hair, nails, teeth, bones, flesh, kidneys, lungs, and so on, took place from undifferentiated tissue. They were already there, all that was required was that they should get bigger – this was simply a matter of accretion, with the extra matter supplied by the food. This was the theory known as preformationism – the idea that the offspring were always contained, pre-formed, in the parent.[17]

The implications of this were extraordinary. Preformationism effectively rejected the earlier theory of generation known as epigenesis, postulated by William Harvey (1578-1657) in *De Generatione* (1651). Epigenesis explained generation and growth by the process of differentiation, whereby the foetus emerged gradually emerge from the homogeneous mass of the egg. Since preformationism bypassed the process of differentiation altogether, the adult form had to be present in the male seed, or the female egg. Furthermore, the adult forms of the next generation of offspring, had to be present in the seed, or eggs, contained in these miniscule adults. Similarly, all subsequent generations had to be contained in seed or egg, within seed or egg, within seed or egg, and so on *ad infinitum*. In this way, preformationsim led to the theory known as *emboîtement*, in which succeeding generations are seen as contained within one another like an infinite succession of Russian dolls. It is a testament to the power of the microscope, and the recent revelation of invisibly small worlds, that this theory gained any credence at all. The corpuscularism of Cartesian matter theory demanded the existence of particles which were invisibly small, and

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[17] Andrew Pyle, 'Animal Generation and the Mechanical Philosophy: Some Light on the Role of Biology in the Scientific revolution', *History and Philosophy of the Life Sciences*, 9 (1987): 225-54; Daniel Fouke, 'Mechanical and 'Organical' Models in Seventeenth-Century Explanations of Biological Reproduction', *Science in Context*, 3 (1989): 365-82.

the evidence provided by the microscope, and by the anatomical researches of Jan Swammerdam (1637-80) on insects, in which he found clear structures from the butterfly present in the caterpillar, seemed to support corpuscularism, and even preformationism.[18]

Nevertheless, in spite of remarkable early success, the theories of preformationism, and *emboîtement*, soon proved to be the Achilles Heel of Cartesian life science. The all too familiar fact that some children took after their mothers and some after their fathers (and some an interesting mix of both) proved embarrassing to preformationism. The discovery in the 1740s of what he called the hydra, by Abraham Tremblay finally spelled the doom of Cartesian mechanism in the life sciences. The fact that the hydra could regenerate from any excised part of itself strongly suggested that, rather than offspring being preformed and held in a special container in the adult, offspring were the result of a highly complex differentiating process of which any living tissue was capable.[19]

It would be a mistake, however, to suppose that the result was a straightforward revival of a vitalistic approach which was inimical to, and would have displaced mechanistic approaches. In fact, the result was far more nuanced. Some thinkers placed emphasis on a more or less mysteriously operating vitalistic principle, while others, reluctant to relinquish the hard-won scientific ethos which Cartesianism had brought into the study of life, tried to explain vitalism in a more materialistic, quasi-mechanistic way. Both ends of the spectrum seemed to accept a Cartesian emergentism – the belief that life somehow emerged from the organisation of matter. However, while some saw this as the result of nothing but organisation, others felt that a particular kind of organisation must call up something extra. The latter were able to point out, for example, that the organisation of the body of

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[18] For preformationism, see R. S. Westfall, *The Construction of Modern Science: Mechanisms and Mechanics* (Cambridge, 1977), 97-104; John Henry, *The Scientific Revolution and the Origins of Modern Science* (Houndmills, 2002), 81-4. On Swammerdam, see, Edward G. Ruestow, *The Microscope in the Dutch Republic: The Shaping of Discovery* (Cambridge, 1996); Catherine Wilson, *The Invisible World: Early Modern Philosophy and the Invention of the Microscope* (Princeton, 1995).

[19] See Thomas S. Hall, *History of General Physiology, 600 B.C. to A.D. 1900*, 2 vols. (Chicago, 1969) on preformation and epigenesis; also V. P. Dawson, *Nature's Enigma: The Problem of the Polyp in the Letters of Bonnet, Trembley and Réamur* (Philadelphia, 1987); Charles W. Bodemer, 'Regeneration and the Decline of Preformationism in Eighteenth-Century Embryology', *Bulletin of the History of Medicine*, 38 (1964): 20-31; Shireley A. Roe, *Matter, Life and Generation : Eighteenth-Century Embryology and the Haller-Wolff Debate* (Cambridge, 1981); Aram Vartanian, 'Trembley's Polyp, La Mettrie, and Eighteenth-Century French Materialism', *Journal of the History of Ideas*, 11 (1950): 259-86.

someone dying of 'natural causes' was precisely the same the moment before death, as it was the moment after. In any case, the differences between exponents of the new life science in the late eighteenth and early nineteenth centuries often reflected more fundamental differences, not in the technicalities of biological observations, but in the wider preoccupations of the naturalists involved. It is beyond the remit of this thesis to pursue this point further, but we shall see a clear example of these subtle differences later, when we examine the theories of life advanced by John Hunter, William Lawrence, and John Abernethy.

The significance of Descartes' mechanical philosophy, then, was to view life as residing with, and emerging from matter. It followed, moreover, that there was no need for Descartes to import the soul as an immaterial principle to animate matter, and in this sense the Cartesian system, in spite of sharing a dualistic approach with Plato, radically departed from the Platonist conception of life. If the soul was not required for making matter alive, how did Descartes view the soul? Further, if all the vital functions in animals and in man could be likened to machines, how did man differ from the beast? The answers to these questions lead to the crisis in the traditional dualist theology. By relinquishing the soul as the living principle, Descartes did not intend to relinquish dualism in full. Instead, he pushed the frontier of dualism to the furthest limit and rested it with the *mind*. For Plato, the soul was the immaterial agent causing all the living functions, and responsible for all mental functions as well. While the Cartesian soul owed its ancestry to the Platonic soul, it is no longer responsible for animating the material body. Furthermore, the Cartesian soul is not responsible for all mental functions either, but only the highest mental functions, denoted as rationality and consciousness. Since sensations, images and passions are mental faculties dependent on bodily stimuli, and common between man and animals, Descartes distinguished man from the beast by reserving only the highest intellectual faculties as the hallmarks of man. For instance, Descartes concluded that though animals had vocal apparatus, they did not talk, and this absence of communication implied an absence of rationality. It was man alone that could come to self-consciousness and pronounce *Cogito, ergo sum*; and that ability, peculiar to the human mind, singled man out from the beast. This particular conception of the mind also conformed to Christian orthodoxy, which taught that the soul was a gift from God to man alone, and was denied to the animals. In Descartes' terminology, the mind referred to the highest of the mental functions – rationality and consciousness.

Though Descartes' mechanical philosophy denied the soul as an animating principle, the conception of the Platonic soul being the animating principle was still in currency in Christian orthodoxy in the early nineteenth century. To a large extent, in the controversies being studied in this thesis, when the traditional conception of the mind was defended, it was the Cartesian mind that distinguished man from the animals that was being defended. When the traditional conception of the soul was defended, it was the Platonic soul as the animating principle, and also of divine origin, that was defended.

With regard to how the immaterial mind interacts with the material body, Descartes described the function of the soul as dependent upon a go-between messenger. The soul was conceived as having its principal seat in the small gland located in the middle of the brain. From the little gland, the soul radiates through the rest of the body, by means of the animal spirits, the nerves and even the blood. The little gland, in which the mind is resident, somehow moves in the manner required to produce the effects corresponding to volition.[20] In respect of the location of the soul, Descartes seemed to want to fix it at one place, but at the same time want it everywhere in the body. Elsewhere in the *Treatise*, Descartes maintained that the soul was 'really joined to the whole body' and that we could not probably say that it existed in 'any one part of the body to the exclusion of the others'. Distinct as matter and mind were to Descartes, he nonetheless described himself as 'very intimately connected' to his body, so intermingled with it that he constituted 'an entire whole with it'. Indeed, the Cartesian dualism is easier to maintain in theory than in practice, in the sense that if mind and matter were so distinct, how the mind acted on and interacted with the body becomes a deepening mystery. As Aristotle has pointed out, 'the contingent connection' between the body and the mind remains the chief obstacle for dualism.

Perhaps, the Cartesian soul was more akin to what we may describe as a centre of cognitive control with nerves linking neurons to every part of the body. Unwittingly, Descartes might have admitted more material reality to the soul than he wished, in the sense that the Cartesian soul, in performing the functions of neural control, seemed to have become more of a physical entity. It also illustrates the difficulty, even for Descartes, in holding on to dualism and trying to explain the interaction between an immaterial mind and the material body. Despite this

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[20] Descartes, *The Treatise of Man*, Part 5, 143-6, 150-60.

difficulty, Descartes could not let go of immateriality. For Descartes, the mind (*res cogitans*) could not be destroyed by physical causes, and therefore, had to be other than matter. Moreover, personhood (*ego*), epitomised in the consciousness of each individual, was not divisible like matter. For these two reasons, Descartes defended an immaterial mind, and would maintain that man was made of *matter* and *mind*.

By explaining all living functions in terms of mechanical arrangements, Descartes seemed to have removed one aspect of the life-matter problem, only to accentuate another aspect of the problem – in the mind-matter relationship. John Locke in *An Essay Concerning Human Understanding* (1690) highlighted the difficulty in explaining the interaction between the material body and an immaterial mind:

> As the ideas of sensible secondary qualities which we have in our minds can by us be no way deduced from bodily causes, nor any correspondence or connexion be found between them and those primary qualities which ... produce them in us; so, on the other side, the operation of our minds upon our bodies is as inconceivable. How any thought should produce a motion in body, is as remote from the nature of our ideas, as how any body should produce any thought in the mind.[21]

For Locke, all our ideas were derived from experience of the external world through the senses and reflection. The Aristotelian leaning in Locke's epistemology rendered the problems posed by Cartesian dualism more acute than for someone like Descartes who considered ideas to be innate like Plato did. Locke also seemed to have a higher regard for the external material world than a typical Platonist, and was able to entertain the notion of 'thinking matter':

> that GOD can, if he pleases, superadd to matter a faculty of thinking, ... I see no contradiction in it that the first eternal thinking Being should, if he pleased, give to certain systems of created senseless matter, put together as he thinks fit, some degrees of sense, perception, and thought.[22]

Locke's solution of 'thinking matter' was not one that could have been entertained by Descartes, who would hold on to an immaterial mind as the first axiom. For Locke, God's omnipotence was the first axiom; his theology would allow the omnipotent God complete freedom to act, so much so that God could make

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[21] John Locke, *An Essay Concerning Human Understanding*, abridged and edited by John Yolton, (1690, London, 1993), iv:3, sect.28.

[22] Ibid., iv:3, sect. 6, 304-5.

matter think if he so wished. Against the charge of promoting materialism by confounding matter and thought with the notion of 'thinking matter', Locke's reply was that the essence of matter did not change, but matter was distinguished by its properties superadded to it.

> the properties of a rose, a peach, or an elephant, superadded to matter, change not the properties of matter; but matter is in these things matter still. God may give to matter thought, reason and volition, as well as sense and spontaneous motion.[23]

Though in his epistemology, Locke was an Aristotelian, in his theory of matter, Locke was an atomist. He therefore used 'essence' differently from Aristotle. For Aristotle, properties are not superadded to matter, and the 'essence' and the properties are the same thing in Aristotelian system. Being an atomist, Locke saw properties as residing in the peculiar arrangement of the constituent parts; properties are therefore 'superadded' to matter by its arrangement. Locke referred to thinking and the power of action as the two primary qualities or properties of spirit. Locke was suggesting that thought or self-motion was not a natural property to either material or immaterial substances, but if God so pleased, He could add the property of thought or self-motion to either material or immaterial substances. This notion of superaddition of properties to matter was employed by Locke to close up the distinction between material and immaterial substances.

While Locke never categorically denied the existence of an immaterial spirit, he did not affirm the existence of such an entity either. Locke seemed to use immateriality to characterise certain properties, like thinking and self-motion, but he was not sure an immaterial spirit or soul existed. Indeed, Locke repeatedly told Bishop Stillingfleet that he would be pleased to have a proof that the soul was immaterial, but he did not find any such proof.[24] Given Locke's Aristotelian epistemology, it was no surprise if he could not find a satisfactory proof for the existence of the immaterial soul, since immaterial entities could not be subject to proof by sense perception.

For the purpose of this thesis, it is important to note the 'progress' (or 'retreat') of dualism from the position of Plato to that of Descartes, and from

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[23] Edward Stillingfleet, *Mr Locke's Reply to the Bishop of Worcester's Answer to His Second Letter,* in *Works*, vol.4, p.460; quoted in John W. Yolton, *Thinking Matter, Materialism in Eighteenth-Century Britain* (Oxford, 1984), 18.

[24] Yolton, *op. cit.,* 20.

Descartes to Locke. For Plato, the immaterial soul was the animating agent, and the source of emotions and mental activities. For Descartes, the soul no longer needed to animate, nor were the emotions and most of the mental functions attributable to the soul. The soul became the 'mind' and was responsible for only the highest of mental activities, namely rationality and consciousness. For Locke, thinking was the immaterial property, which could be superadded to matter if God so wished. In entertaining the notion of 'thinking matter', Locke was still holding on to a form of dualism. For Locke the philosopher, his epistemology was Aristotelian; but for Locke the devout Christian, his dualism was a derivative of the Platonic tradition. Tenaciously, Locke held on to his Platonic dualism against his Aristotelian system of epistemology by holding fast to the belief of God's omnipotence. In Locke, we see the attempt of philosophy and theology trying to come together, albeit fraught with tension, and requiring Herculean efforts. If Locke had managed to hold on to dualism until his death in 1707, many eighteenth-century thinkers would find such a position untenable and let go of dualism altogether.

When Descartes declared his subject in *Treatise of Man,* not *Man* but a *Machine*, albeit a hypothetical one such as God might have made, might he not foresee that his hypothetical machine would one day become a *de facto L'Homme Machine* in the hands of his fellow countryman? Julien de la Mettrie, writing a century after Descartes, declared in his essay *L'Homme Machine* (1747) that all mental activities, including thinking, were capable, in principle, of being explained mechanically. In this man-machine, there was no place for the soul, all functions resided with matter and its mechanical arrangements.

> The term 'soul' is therefore an empty one...Given only a source of motion, animated bodies will possess all they require in order to move, feel, think, repent – in brief, in order to behave, alike in the physical realm and in the moral realm... Let us then conclude boldly that man is a machine, and that the whole universe consists only of a single substance [Matter] subjected to different modifications.[25]

L'Homme Machine was followed by *L'Homme Plante* in 1748, in which La Mettrie reduced man further to be the same as a plant.

> Anyone who looked on man as a plant was no more uncomplimentary to that noble species than he would have regarded him as a mere machine. Man grows in the womb by a process of vegetation; his body runs down and is wound up again like a watch, either by its own

[25] Toulmin and Goodfield, *op. cit.*, 166, quoting La Mettrie.

> recuperative power...or by the skill of people who understand it, not in this instance watch-and-clock makers, but biochemists.[26]

If man was essentially a machine, then, according to La Mettrie, 'we are no more committing a crime when we obey our primitive instincts, than the Nile is committing a crime with its floods, or the sea with its ravages'. Human behaviour was a matter of physical necessity, and morality made no sense in La Mettrie's conception of man.

Given the inflammatory nature of his remarks, it was not surprising that even the audacious La Mettrie had the wit to publish his works anonymously. Another French materialist, more subtle and learned than La Mettrie, was the tireless editor of the *Encyclopedie*, Denis Diderot (1713-1784). In *D'Alembert's Dream* (1769), Diderot unburdened his philosophic speculations to his friend D'Alembert. Diderot's extensive scientific knowledge and his powers of imagination come to bear on the text, to give it much persuasiveness, as in the following passage:

> What is this egg? An insensitive mass ... How does this mass evolve into a new organization, into sensitivity, into life? Through heat. What will generate heat in it? Motion. ... And will you maintain, with Descartes, that it is an imitating machine pure and simple? Why, even little children will laugh at you, and philosophers will answer that if it is a machine you are one too! If, however, you admit that the only difference between you and an animal is one of organization, you will be showing sense and reason and be acting in good faith; but then it will be concluded, contrary to what you had said, that from an inert substance arranged in a certain way and impregnated by another inert substance, subjected to heat and motion, you will get sensitivity, life, memory, consciousness, passions, thought.[27]

D'Alembert's Dream was in many ways a dialogue with Cartesian dualism. The important points made by Diderot were: (1) that there is only matter, and all living and mental functions are the work of heat and motion upon matter; (2) that the difference between man and animal is one of organization. Diderot was an atomist, and by organization he would mean the special arrangement pertaining to each living form of their constituent parts. Descartes maintained that consciousness and rationality were attributable to an immaterial mind. Diderot argued that even consciousness and thought arose by dint of organization of matter. Diderot's materialism seemed to have eventually precipitated his move from deism to atheism.

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[26] Paul Hazard, *European Thought in the Eighteenth Century* (Harmondsworth, 1965), 138, paraphrasing La Mettrie.

[27] Denis Diderot, *D'Alembert's Dream* (1769, Harmondsworth, 1966), 158-9.

Towards God, Diderot was filled with wrath, bitterness, and rage. In one of his stories, a misanthropist hid himself in a cave in order to meditate on vengeance on the human race, at length came out, shouting loudly 'God! God!'

> His voice resounded from pole to pole, and behold, men fell to quarrelling, hating, and cutting one another's throats. And they've been doing the same thing ever since that abominable name [namely God] was pronounced, and they will go on doing it till the process of the ages is accomplished.[28]

Another prominent French materialist of this period was Baron d'Holbach (1723-1789). His seminal text promoting materialism along with atheism was entitled *Le Systeme de la Nature*, published in 1770. The chief tenets of d'Holbach's argument are: (1) that experiment has shown that matter, supposed to be inert and inanimate, if combined in a certain way can become active and endowed with life and intelligence; (2) matter and motion suffice to explain everything; (3) that matter is eternal and necessary; (4) that there is no God, and matter acts of itself by eternal necessity.[29] According to d'Holbach, 'the "soul" is in truth the body in its aspects of thinking, feeling and willing'. In dealing with unbridgeable dualism of mind and matter, d'Holbach proposed that it would have been more natural simply to say: 'As man, who is material can think, therefore, matter is capable of thought'.[30]

French materialism of the eighteenth century often came with a strong flavour of atheism, so much so that the warning that 'materialism and atheism go hand in hand' was the uppermost concern for many in nineteenth-century Britain whenever materialism was discussed. Priestley's materialism, however, offered a counter example to the claim that 'materialism and atheism go hand in hand'.

Joseph Priestley (1733-1804), the prolific writer who discoursed widely on philosophical, political, religious and moral issues, was a Dissenting minister and a scientist of considerable eminence. As a clergyman, Priestley saw his role as a defender of true religion central to his calling and probably primary to his scientific endeavours. *The Disquisitions Relating to Matter and Spirit* (1777) was written with the wish of purging Christianity of the '*corrupt leaven*', in the form of the notion of the immaterial soul.[31] Priestley argued that the notion of the soul being of a

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[28] Hazard, 408, quoting Diderot, no reference given by Hazard.

[29] Ibid., 142-3.

[30] d'Holbach, quoted in Hazard, 143.

[31] Joseph Priestley, *Disquistions Relating to Matter and Spirit* (London, 1782), xx.

substance distinct from the body was pagan in origin, and was opposed to the *true system of revelation*. Priestley traced this corrupt leaven to the system of philosophy to ancient Egypt, to Greece and Rome, and as eastward as India.[32] Priestley argued that unless the corrupt leaven (the immaterial soul) was purged from Christianity, true religion would not prevail.

On a personal level, Priestley had journeyed through the centuries of ideas covered in this section. He confessed that he had been educated 'in the very straitest principles of *reputed orthodoxy*', and 'zealous he once was for every tenet of the system' – the system of an immaterial soul and a dualistic conception of man.[33] Priestley maintained, that when the Cartesian hypothesis was properly considered, one could only admit that the difficulty was in fact *impossibility*.[34] He also examined Locke's position and chided Locke for not being prepared to subscribe to the logical conclusion that man was of one uniform substance.[35]

The conclusion that Locke was not prepared to draw in order to hold on to dualism was embraced by Priestley as the only consistent option forward. Priestley was able to come to a monistic conclusion by abandoning a certain notion of matter that was indispensable to the dualists. He saw the chief obstacle in the 'thinking matter' debate as the vulgar (common and wrong) view of matter as solid, impenetrable and completely inert. If one could abandon this notion, then there would be no need for the concept of two substances in order to explain thought and sensation. Priestley's 'new supposition' was that 'matter is not impenetrable', but consisted of physical points, endued with powers of attraction and repulsion.[36] Priestley referred to this new concept of matter as the 'immateriality of matter'.[37]

Priestley resolved the 'thinking matter' debate by immaterialising matter on the one hand, and materialising ideas on the other. Priestley's epistemology followed Aristotle and Locke. To Priestley, there appeared 'no more reason to

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[32] Ibid., 51.

[33] Ibid., in his dedication to the Rev. William Graham.

[34] Ibid., 81; author's italics.

[35] Ibid., 51-2.

[36] Priestley's new proposition of matter was influenced by Boscovich's hypothesis contained in *Theoria Philosophiae Naturalis* 1758, English translation in 1763 as *A Theory of Natural Philosophy*. It would appear that Boscovich was also an atomist, if he considered matter as consisted of physical points.

[37] Joseph Priestley, *History and Present State of Discoveries Relating to Vision* (London, 1772), 18; quoted in Yolton, *op.cit.*, 113.

suppose that a man can think out of the body, than he can hear sounds, or feel cold, out of the body'.[38] Granted that ideas came to us through our senses of the external world, Priestley argued that ideas were therefore divisible, because the external objects which generated the ideas in the first place, were divisible:

> [ideas] are produced by external objects, and must therefore correspond to them; and since many of the objects or archetypes of ideas are divisible, it necessarily follows, that the ideas themselves are divisible also.[39]

From arguing ideas being divisible, Priestley then argued that ideas could not have come from a substance whose nature was indivisible.[40] He then firmly rested the powers of perception and thinking with an organized system of matter, which he identified as the brain.[41] To Priestley, the 'proper and direct proof, that the seat of the sentient principle in Man, is the material substance of the brain'.[42] Elsewhere, he made more direct statements about the brain, for example, that 'there is just the same reason to conclude that the brain thinks, as that it is *white* and *soft*'.[43] The notion of 'thinking matter' Locke had proposed under the auspices of God's omnipotence, Priestley advanced into a statement of fact, and by establishing that matter could think, Priestley was able to conclude that man was of one uniform substance:

> I rather think that the whole man is of some uniform composition; and that the property of perception, as well as the other powers that are termed mental, is the result (whether necessary, or not) of such an organical structure as that of the brain.[44]

It is important to distinguish, however, that Priestley's materialism was not the same as that advanced by his contemporary French materialists. Priestley himself tried to state some of the differences in his *Disquisitions*, by asserting:

> It is a gross mistake of the system of materialism to suppose ... that the vibrations of the brain are themselves the perceptions. For it is easy to form an idea of there being vibrations without any perceptions accompanying them.[45]

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[38] Ibid., 50-1.

[39] Priestley, *A Free Discussion of the Doctrines of Materialism* (1778), 37, quoted in Yolton, *op. cit.*, 114.

[40] Priestley, *Disquisitions*, 58.

[41] Ibid., 46-7.

[42] Ibid., 44.

[43] Priestley, *A Free Discussion*, 61.

[44] Priestley, *Disquisitions*, viii.

[45] Priestley, *Disquisitons*, 91.

While French materialism resulted in *materialising man*, Priestley's materialism ended in *immaterialising matter*. The important distinction of Priestley's materialism from his French contemporaries was lost to his generation. As a result, 'Priestley's fascinating suggestions were not taken up and extended', and 'no one gave the emerging view of man as one substance – foreshadowed by Priestley – a systematic articulation'.[46] The fear of materialising man like the French school was too uppermost in the public minds to register Priestley's notion of *immaterialising matter* properly. Another distinctive feature of Priestley's materialism that was lost to his generation was how it was integrated with his religion. Priestley was a Dissenter, who took his religion seriously and was prepared to suffer all the disabilities for what he believed to be the true religion. Descartes, Locke and Priestley were in fact all religious men trying to make better sense of their epistemology and their faith.

To a large extent, McManners' remarks on the French theologians of the eighteenth century are pertinent to the British scene at the turn of the nineteenth century too:

> The French theologians of the eighteenth century had inherited and were engaged in refining a Platonic doctrine of the soul, as against an Aristotelian one. They did not think of the soul as the 'form' of the body, they did not take seriously the part played by the vicissitudes of the body in the formation of the personality, and they had no insight into the process by which individuality grows and defines itself; individuality, to them, was an initial gift which undergoes modifications. They thought of the soul as a substance, albeit spiritual and ethereal. There was, implanted in the body, an immaterial, substantial self, which could well have existed long before and which certainly carried on for ever after the body had disappeared.[47]

McManners laments the unfortunate outcome for the French theologians in holding on to a Platonic soul in the dawn of various scientific discoveries; that 'the ghostlike Platonic soul of the Christian apologists could not be enriched or diversified by new discoveries, nor could it play any part in new hypotheses'. He further analyses that because the Platonic soul could not be incorporated or enriched by new systems of thought, it also could not be contradicted by them. It was therefore 'in the powerful defensive position, from the point of view of abstract logic, of being irrelevant'.[48] McManners' comments suggest that the development of French materialism in the

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[46] Yolton, *Thinking Matter*, 125.

[47] John McManners, *Death and the Enlightenment* (Oxford, 1981), 148.

[48] Ibid., 149.

eighteenth century was perhaps an aberration of this century-old debate between Plato and Aristotle. It was an aberration because French materialism de-railed the debate from the track of philosophy into an anti-religious movement, conjoining materialism with atheism. Furthermore, the political turmoil of the Revolutionary and Napoleonic eras reinforced this aberration in the minds of the public – that materialism promoted atheism and revolutions. At the dawn of scientific discoveries in the life sciences, the life-matter debates that flared up in Britain in the early nineteenth century were, in essence, a continuation of the century-old debate between Platonism and Aristotelianism. But the course of the debates became heavily influenced by the anti-religious flavour of French materialism and the protean politics in France. An important aspect of the debates, which was the Platonic soul clashing with Aristotelian epistemology, was lost in the midst of safeguarding a religious basis for morality.

III

The suspicion with which French philosophy was held that had prevented a fair appraisal of Priestley's materialism was eloquently expressed in Samuel Drew's *Essay on the Immateriality and Immortality of the Human Soul* (1802):

> The progress of French philosophy, perhaps, has been more destructive to public morals, than the armies of France have been to the nations of Europe. By appealing to the more vulnerable parts of human nature, we suffer our principles to be undermined by imperceptible degrees, till we barter truth for error; and, by adopting sentiments which originate in plausible appearance, a superficial mind is tempted to place the reasoning by which it has been seduced, among the recondite depths of science.[49]

Samuel Drew's octavo publication of *An Original Essay on the Immateriality and Immortality of the Human Soul* in 1802 was a 364-page long treatise, and was avidly perused by his contemporaries. The second edition was released in 1803 with two new sections added on the Omnipotence and Omniprescence of God. It went through two impressions in England and two in America before its third edition in

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[49] Samuel Drew, *An original Essay on the Immateriality and Immortality of the Human Soul, founded solely on physical and rational principles* (1802, 5th edn., 1831), x; quoting from the preface of the first edition.

1811. It went into a fourth edition in England and America, and was even translated and published in France before the launch of the fifth edition in 1831. The popularity of Drew's work would suggest not only the eagerness with which his generation dwelt on the subject of immortality, but also that his opinions were 'fully proved by the numerous testimonies of respectful approbation ... from men of distinguished character in various depths of literature.'[50] The salient points of Drew's treatise were: first, that the notion of immortality was a religious sentiment inspired by and underpinned by an almighty God; secondly, that human immortality took the form of a continual existence of an immaterial soul after death; and thirdly, that to harbour such a notion was a proof that men were superior to the beasts.

'If immortality be not true, then no God but a mocking fiend created us' is a famous line from the poem *The Immortality of the Soul* by the Victorian Poet Laureate Lord Tennyson. A similar argument was employed by Drew in his *Essay*. The fact that we had the idea of an immortal God, argued Drew, must therefore presuppose the existence of such a God. Furthermore, to be God, He is necessarily immortal:

> If, therefore, our idea of the being of a God be simple, it plainly follows, that a God must be in existence... Among the essential attributes of God, we must include his immortality, it being as impossible to conceive God to exist, abstracted from immortality, as it is to conceive him to exist, abstracted from omnipotence or holiness. For that which is not necessarily immortal, cannot be God.[51]

From the immortality of God, Drew proceeded to establish the immortality of the human soul:

> Our idea of immortality being thus ascertained, a question arises whether this idea can be extended beyond Deity, in its application. So far as finite can assimilate to infinite, we find in the human soul all the radical principles of an immortal nature; it is immaterial, and includes consciousness and will.

Drew clearly considered that such an application subsisted. Having established the 'distinct notions of the certainty of immortality', and 'of the existence of the human soul', the next stage in Drew's argument was 'to trace out those intermediate ideas' necessary to 'connect the two simple conceptions together'. He stated that the

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[50] Drew, *op. cit.*, vii.

[51] Drew, *op.cit.*, 217-9.

'unquenchable desire which every man feels after happiness' appeared to him most likely to be the connexion:

> ... from a consciousness of future punishment, there is, in every human mind, an insatiable desire after the greatest degree of possible happiness, which embracing perpetuity, certainly includes the idea of immortality.[52]

The second feature concerning the notion of human immortality pertained to the belief of a separate existence of the disembodied soul after death. In Drew's *Essay* he commenced with the proofs of the immateriality of the soul and asserted that man was 'compounded of matter and spirit'. He argued that 'the powers of the soul', by which he meant 'consciousness, volition, judgement and perception', were immaterial, and they must inhere in a substance other than matter; hence, not even God could make matter think. From establishing the immateriality of the soul, the *Essay* proceeded to define death as the dissolution of the bodily organs, which were as 'nothing more than mere instruments to the mental powers'. The soul, by dint of immateriality, was 'inaccessible to corruption from any thing contaminating, either internal or external'. Drew's arguments led him to conclude that:

> The soul cannot perish by dissolution, because [it is] devoid of parts; nor by privation, because its mode of existence undergo[es] no internal change; nor by annihilation, because it can have no tendency to it, and is inaccessible to all external forces.[53]

Even if the soul's incorruptibility owing to its immateriality was to be readily conceded, what appeared to be a graver issue for Drew and his generation was the retention of identity for a disembodied soul. As Drew stated it:

> Consciousness distinguishes an immaterial substance, both from matter and non-entity. – A lifeless, unconscious, immaterial substance cannot be comprehended within the definition either of matter or spirit. – The removal of consciousness from an immaterial substance destroys its identity. – Identity and existence inseparable.[54]

Consciousness conferred identity, and identity and existence were inseparable. For Drew, the individual's consciousness seemed to be encapsulated in the disembodied soul, and this 'capsule of consciousness' had to have some form of existence, for without existence, there could be no retention of identity. Drew stopped short of fanciful speculations by saying, 'We have no conception that an immaterial

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[52] Drew, *op.cit.*, 219.

[53] Ibid., Summary of arguments for Parts I and II under the table of contents.

[54] Ibid; part of the summary of arguments for Part II, chapter 2, section iii.

substance can exist, abstractedly from all life and consciousness', though he absolutely maintained that 'existence and identity' were inseparable.

A pamphlet published in 1772 by a rector in the Carribean, Archibald Cockburn, offers further insight into the extent of interest in and speculation on the existence of the soul after death in the late eighteenth century.[55] *A Philosophical Essay concerning the Intermediate State of the Blessed Souls* is the title of the pamphlet, and the concern of Cockburn's essay was the existence of 'the Spirits of the Just Men made Perfect' in a state of 'Estrangement from their Bodies, and Independency of all material Beings'.[56] Cockburn professed that his attempt to 'penetrate into the Condition of Separate Spirits, residing in the Happy Regions' was to resolve some enquiries concerning these 'Spirits of Just Men made Perfect' with as much 'Light and Perspicuity' as he could draw from his understanding. He listed six enquiries which he addressed in turn. Some of these enquiries were of such practical concerns as whether these souls of Just Men were distinguishable one from another, and whether they were distributed into various ranks and orders according to a regular gradation. The answers to these questions were in the affirmative; and Cockburn maintained that 'acquired differences super-induced on Souls by Culture and Improvement' would be 'lasting marks of Distinction in another Life'.[57]

Another enquiry concerned whether the 'good and virtuous Souls' upon their separation form the Body, would 'transmigrate into a subtiler corporeity', and set into 'living frames of air and aether', as the 'Vehicular Hypothesis' represented. According to Cockburn,

> Doubtless a Soul incarcerated in such a system, where Fire and Flame is the circulating Fluid, must receive perpetual Sensations of Combustion, and groan under Torments insupportable. And there wants no more to be said, to overthrow Aetherial Vehicles, since they are inconsistent as Hell itself, with the State of the Blessed.[58]

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[55] The name Archibald Cockburn, designatory MA, suggests that the author might be Scottish, educated in one of the four ancient Scottish Universities. He was rector of the parishes of St. Mary Cayon and Christ's Church, Nichola Town, in St. Christophers, likely to be somewhere on Carribee-Islands in colonial America. The *Essay* was dedicated to William Mathew, 'Lieutenant-General over His Majesty's Leeward Carribbee-Islands in America'. The obsequious language of Cockburn's dedication to his patron would make Mr Collins in Jane Austen's *Pride and Prejudice* true to life rather than a caricature.

[56] Archibald Cockburn, *A Philosophical Essay concerning the Intermediate State of Blessed Souls* (London, 1772), 1.

[57] Ibid., 3.

[58] Ibid., 32.

Contrary to what the Vehicular Hypothesis implied, Cockburn affirmed that the 'Aetherial Systems' were unnecssary in the future existence, because the Soul could operate without them. He informed us that the hypothesis was derived to 'provide for the security of our perceptive powers', when their present fence (namely the body) was broken down and levelled with the dust. He argued that such a hypothesis was only necessary if the soul were only a modification of matter and derived its sensibilities from organic structure, but since the soul was not of matter, the preservation of its sensibilities by aetherial systems was superfluous. All these speculations about the souls being set in aether may sound ridiculously ethereal to us, but they reflected how substantially the state of disembodied existence for the soul occupied the minds of those living in the late eighteenth century. The details with which they embellished their conjectures seemed to help them add reality to their future state. The separate disembodied existence of the soul was no mere philosophical concept; it attained the status of reality for some who were prepared to let their speculations go further.[59]

The third strand in the notion of immortality concerns the distinction between man and the beast. Any discussion on human immortality in this period seemed to be incomplete without some observation of man's superiority over the beast in two respects. First, it was claimed that mankind possessed reason while animals had only instinct. Secondly, animals were considered to live only in the present and the ability to conceive of a future state was deemed to be peculiar to man. Common to both man and brutes was animation; it was the possession of mental powers, such as reason and recollection, which set man apart. Drew concentrated on establishing the immaterial origin of these mental powers, and left the link between an immaterial principle and man's claim or hope for immortality unclear.

A more cogent link between immortality and human intellect is offered by *Vindicie Mentis – An Essay of the Being and Nature of Mind,* published anonymously in 1702 by the author who merely called himself a Gentleman. He was arguing the case for a form of human immortality, probably within a Reformed tradition. His Essay was directed against the Materialists, who opposed the view of

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[59] Cockburn in his last enquiry addressed the issues of 'happy souls having after Death been invested with Bodies', what was commonly called Apparitions. Here the Scriptures, Homer, Virgil and personal accounts were cited in turn as strong grounds for the re-assumption of bodies. It indicated how far the speculations could go to still stay within the bounds of respectability. Cockburn did not publish anonymously, and at least the author thought it a respectable work to dedicate to his patron.

man being the union of mind and body; the Mortalists, who advanced the soul-sleeping doctrine to account for the state of existence of the soul after death; and various Popish doctrines like saying masses for the deceased. There is little doubt that the author was a religious man. He was also an intellectual offspring of Descartes, as was witnessed in the following assertions:

> That Mind is, or that there is Mind; is to me and others most certain, if I have a certainty of my own Being.... it matters not, this will infallibly remain a Truth to me, *That I am.*
>
> *What I am*: the Mind is known to its self, and perceives all that is in it, and it is known no otherwise than as Thinking; and by Thinking however considered.[60]

From *Vindicie Mentis*, one may be able to deduce that Cartesian thought provided the missing link between the emphasis on the superiority of the human mind and the claim for human immortality.

Before Descartes, the mind, the soul and the spirit were all conceived of being immaterial in their nature. After Descartes, the mind was elevated to be the immaterial principle in man; and if Descartes referred to the soul, what he meant was the mind alone and nothing else. The need to emphasize the distinction between man and the animals was itself a Cartesian legacy. After all, Descartes so successfully reduced all life functions to mechanical explanations that there was truly nothing to distinguish man from the ape on that level. The missing logic behind the connection of man's superior intellectual capacity and his hope for immortality is perhaps something along the following line: that man and animals as life forms exhibit the same degree and quality of animation; the exhibition of his superior intellectual abilities distinguishes man from the animals, and points to the existence of an entity denoted as the mind; in the Cartesian tradition, the human mind was an immaterial principle, differentiating man from the bodily matter which he shares in common with the animals; the mind survives the physical dissolution of bodily matter on death; man attains immortality while animals are doomed to complete annihilation, bodily matter being all that the animals have. In a nutshell, man distinguishes himself from the animals by possessing an immaterial mind, which confers on him immortality. The connection or association between human immortality and man's superior mental powers to animals is thereby forged. In the words of a contemporary minister, possibly a Reverend J. Peddie of Edinburgh, in his enterprising article

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[60] [A Gentleman], *Vindicie Mentis* (London, 1702), 11-12; author's italics.

'Sacred Zoology' published in 1816, the association of man's rational faculties with his claim to immortality appeared to be self-evidently the case from the Scriptures:

> The Scriptures ascribe a soul, or spirit, to animals; but it must be evident, from what has been said, that it must be a soul of an inferior order, a spirit of a less noble kind, than what belongs to man. In respect of the body, ... which at length dies, and is resolved into dust, the brute animals are on a level with man: But, in respect to the soul, or spirit, man possesses great advantages over them, being endowed not only, as we have seen, with reason, but with immortality. He alone survives death, and in a future world enters on a state of being, in which he enjoys everlasting felicity, or suffers endless woe.[61]

John Fearn's *Essay on Immortality*, published in 1814, made even stronger a case of this peculiar aspiration in man to a future state as a sound basis for his hope of attaining immortality.

> I will here present a speculation, limited to the Human Species itself; ... to prove that the grand characteristic of MAN, as contradistinguished from the brute order, is very certainly designed to force him above the ignoble happiness of brutes; ... his characteristic endowment, does by its proper essential operation lead him to discover, and to endeavour to deserve, a higher happiness in a future state.[62]

Whether it is man's superiority that drives him to quest for immortality, or his desire for immortality is a proof of his superiority over the animals, are largely two sides of the same coin, and the argument is in fact a circular one. That the notion of human immortality should become so enmeshed with the necessity for an immaterial mind to assert human superiority over the beasts provides the intellectual background to understand the wide-ranging implications of any attempts to level the mind with the brain. Such an alignment not only threatened to remove man's superiority over the beasts, but also undermined the foundation for the hopes of human immortality.

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[61] [J.Peddie], 'Sacred Zoology', *The Christian Repository and Religious Register*, 1(1816), 65-75, 73; italics mine. A hand-written note 'by Rev. J. Peddie, DD. Edinburgh' in contemporary hand appears on the title page of the article in the copy at the University of Edinburgh. The article was serialised into four parts, discussing in turn the place of the animals in the ranking order of creation, the relation of animals to God as the creator, preserver, and governor of the brutal tribes, the differences between man and the animals, and the duties of man to the animals. The purpose of the author was to aid his fellow Christians, and his younger brethren in the ministry, to attach precise ideas to the many allusions to the animal creation which are scattered through the Scriptures'(68). This kind of theology, with its sole reliance on the Bible, on a topic so wide-ranging, will not be deemed the best theology nowadays, but was probably both fashionable and acceptable in the early nineteenth century.

[62] John Fearn, *An Essay on Immortality* (London 1814), 304; author's italics. 'An Essay on Immortality' is the full title. Fearn introduced himself on the title page as the author of the various publications on the phenomena of the mind.

For an alternative to human immortality based on an immaterial soul, it was Priestley again who offered the most cogently argued alternative. It is important to note the differences between Priestley's form of materialism and the French materialism in respect of human immortality. To the French materialists there was no more to man than bodily matter: with the dissolution of his bodily upon death, man was no more. Preistley's materialism was singular in that he proposed a higher view of matter by questioning the common assumptions concerning the corruptibility of all matter on the one hand, and the incorruptibility of immaterial substance on the other:

> All things material are not liable to corruption, if by corruption be meant dissolution, except in circumstances to which they are not naturally exposed. It is only very compound bodies that are properly liable to corruption, ... till we know something positive concerning this supposed immaterial substance and not merely its not being matter, it is impossible to pronounce whether it may not be liable to change, and be dissolved, as well as a material substance.[63]

By exalting matter, Priestley was able to work out a future for matter, and of the body of man, which to him was compatible with the Scriptures. He distinguished between 'a candle extinguished' and 'a candle annihilated'; a candle extinguished could still be re-lighted, but a candle annihilated had nothing left to light again. When a man died, it was analogous to a candle extinguished:

> ... though a man may be said, figuratively speaking, *to become extinct at death*, and his capacity for thinking cease, it may only be for a time: for no particle of that which ever constituted the man is lost, whatever decomposed may certainly be *recomposed*, by the same almighty power that first composed it,... and the powers of thinking, whatever depended upon them, will return of course, and the man will be, in the most proper sense, *the same being that he was before*.[64]

Consistent with his view that man was composed of one uniform substance, Priestley believed that the whole person died at death. For Priestley, human immortality had nothing to do with an immaterial soul, which supposedly had never died in the first place. Priestley's hope for human immortality was founded on the *resurrection* of the whole material body after death:

> by any possible construction of the words, be called a resurrection of the dead; which certainly requires that it is something that dies, and is put into the grave (and an immaterial soul is never supposed to die at

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[63] Joseph Priestley, *Disquisitions*, 131.

[64] Ibid., 204.

all) that must revive; and rise again out of it.

He emphasised that for the 'resurrection of the dead' to make any sense, the whole person would die, but matter had a future, in that 'whatever decomposed would recompose by the almighty God'. As with his investigation into the nature of man, Priestley's view on human immortality was arrived at in the process of purging Christianity from all pagan influences. He stated unequivocally that 'the Apostle Paul's idea of the resurrection of the dead was the only foundation for a future life'.[65] Priestley's view of immortality would indeed be closer to Christ's resurrection, and would appear to be a more faithful interpretation of the Scriptures in respect of any future state for man. The notion of some form of restoration of the material creation was present to a certain extent within mainstream Christianity. For example, Samuel Horsley, Bishop of Asaph, commented on Christ's existence after his resurrection in the following terms:

> [Christ] was become the inhabitant of another region, from which he came occasionally to converse with his disciples. His visible ascension, at the expiration of the 40 days, being not the necessary means of his removal, but a token to the disciples that this was his last visit; an evidence to them that the heavens had now received him, and that he was to be seen no more on earth with the corporeal eye till the restitution of all things.[66]

Horsley mentioned the restitution of all things, and for many, it was not difficult to conceive of the material world being renewed, but it fell short of including human beings in this restitution. The reason for this inability to include mankind within the material world was most likely due to the legacy of the Platonic soul and the derivative Cartesian mind. Priestley's view of human immortality in the form of bodily resurrection was only possible if, and only if, the Platonic view of matter (lowly and evil) was abandoned. But so long as the Platonic ghost lingered on within the system of Christian theology, the future of matter remained blighted. The corollary was the need for dualism, for a form of human immortality that did not involve matter. Unless the Platonic soul was relinquished, dualism would prevail and continue to smother the alternative to human immortality that involves the restoration, restitution, or resurrection of the material body.

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[65] Ibid., 204.

[66] Samuel Horsley, as the late Lord Bishop of St Asaph, *Horsley's Sermons – a Series of Nine Sermons on the Nature of Evidence by which the fact of our Lord's Resurrection is Established* (London, 1815); quoted in *Electic Review*, N.S. 5(1816),157; italics mine.

IV

On 7 May 1815, Daniel Dewar, D.D., Minister of the College Church, Aberdeen, delivered a sermon on 'The Glory and Happiness of Heaven'. The subject matter of the sermon might have been expected to direct the gaze of his congregation heaven-ward, to contemplate eternal bliss in the after-life. If that was what Dewar's congregation expected, they were very soon brought back to earth. The chief aim of the sermon was to remind the congregation that there was 'no such thing as heaven to [them], guilty creatures as [they were]'; and that there was 'no such thing as [their] being introduced into heaven, except through the sanctifying influences of that Divine Spirit'.[67] Sin and guilt seemed to come to the fore in the contemplation of heavens, and 'the removal of all evil, moral and physical' was a pre-condition for any heavenly happiness.

Immortality presupposed morality, a presumption that was evidenced in contemporary writings. A letter from a lady on the death of her mother, dated 19 December 1811, recorded the final hours of her dying mother.[68]

> But she [the dying mother], dear humble soul, would only reply, 'I am a poor creature. I am poor and ready, I plead guilty. "I wait for God, my soul doth wait". I have surely obliged for thy salvation, O Lord!'
>
> 'O yes!' I [the daughter] replied, 'and in a little you will, "receive the end of your faith, the salvation of your soul".'
>
> 'God grant it may be so,' she replied.

In her state of physical suffering, the removal of guilt seemed to preoccupy the mind of the dying in her last hours. It was as if her earthly life was a long journey towards this 'end of faith', the 'salvation of the soul' by the absolution of all sins. Her passing was described by her daughter as: 'without a groan her spirit, redeemed to Jesus by his own blood, took its station where her heart and conversation had long been'. To the daughter, 'Heaven is the country where [her] best kindred dwell'. She referred to this world as 'a dark world', and until she through grace also got to heaven, she never expected 'to see a lovelier sight than [her] mother in life and in death'. What was being recorded in the letter was also the presence at the deathbed as a ritual, the significance of which was captured by Philippe Aries in *The Hour of Our Death*:

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[67] Ibid., quoting the paraphrase of the reviewer.

[68] Anon., 'A letter from a lady on the death of her mother, 19 December 1811', *The Edinburgh Christian Instructor*, 12(1816), 305-6.

> Presence at the deathbed in the nineteenth century is more than a customary participation in a social ritual; it is an opportunity to witness a spectacle that is both comforting and exalting. ... In the bedrooms of the most ordinary middle-class Western homes, death has come to coincide with beauty.[69]

The beautification of death, with its association of a 'better' existence in heaven thereafter, was the 'comforting and exalting' thought dominating the account of the daughter. However, as Aries points out, the beautified death was an 'apotheosis' that should not blind us to the contradictions it contained; that death was hiding under the mask of beauty. Indeed, Aries reminded the readers that 'in Christian doctrine and in ordinary life, death had been seen as a manifestation of evil, an evil that insinuated itself into life and was inseparable from it'. For Christians, 'death was the moment of a tragic confrontation between heaven and hell that was itself the most banal expression of evil'.[70]

The notion of heaven as a homecoming for the righteous, and hell as a means of retribution for the wicked, was prevalent at the turn of the nineteenth century. An article entitled, 'On Judging of the Dead', published in the *Edinburgh Christian Instructor* in 1816, deliberated on 'the purposes of religion' as 'better served, by observing that awe which [gave] confidence to none of the living, and [threw] despair to none but sinners, and [warned] all to flee to God'.[71] The joys and sorrows in the home of immortality were dwelt in great detail in a 'practical' sermon, from the manuscript of an anonymous, deceased clergyman in 1815. Perhaps prompted by his own end, the clergyman's writing was full of details, as what he envisaged would happen after death: 'the body [was] laid in the grave and [was] dissolved in dust; but the soul exist[ed] in a separable state, in a capability of misery or happiness'. The clergyman pronounced death as 'a sad and awful end' for the wicked, for it was the end of their hopes and the beginning of their eternal misery. The wicked would 'have no more offer of mercy – no farther opportunity of being interested in Christ and salvation'.[72] Judgement followed death immediately, according to this clergyman. For the wicked, the judgement brought the beginning of their misery, which was dramatised as:

> the gnawing of 'the worm that dies not, and as the burning of fire that

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[69] Philippe Aries, *The Hour of Our Death*, tr. Helen Weaver (Harmondsworth, 1977), 473.

[70] Ibid., 473.

[71] Anon.,'On Judging of the Dead', *The Edinburgh Christian Instructor*, 13 (1816), 164.

[72] Practical Sermons, No. 25, *The Edinburgh Christian Instructor*, 10 (1815), 25-37.

> cannot be quenched'. And the effect of this misery is expressed by 'weeping, and wailing, and gnashing of teeth'.[73]

For the godly believers, death was pictured as a kind of deliverance on two scores – firstly, the bodily deliverance from the doom of the material body; and secondly, a spiritual deliverance for the soul from the trials and toils of this life. 'As the souls of the believers are made perfect in holiness, so they immediately pass into glory.'[74]

The doctrine of 'Eternal Torments' was the subject matter by the anonymous author of *Eternal Punishment proved to be Not Suffering but Privation* (1817), who identified himself as 'a member of the Church of England'. According to the author, the doctrine of 'Eternal Torments' was preached on successive Sundays in the village where he lived, and the difficulties he had regarding this doctrine prompted him to his own research on this subject. In his preface, the author declared his former prejudice in favour of the doctrine of which he now opposed. Overall, the author gave the impression that he wanted to stay within the folds of the Anglican Church, but was deeply troubled by the difficulties of the doctrine of 'Eternal Torments' which was upheld as orthodoxy by the Church. The inclusion of an appendix of Bishop Jeremy Taylor's *Contemplations on the State of Man* provides some ideas of what the doctrine of 'Eternal Misery' consisted of:

> The damned would take it for a great regale to have a dunghill for their bed, instead of the burning coals of that eternal time.
>
> The tyrants of Japonia bury those who confessed Christ with their heads downwards, half their bodies in a hole in the earth, filled with snakes, lizards, and other poisonous vermin; but even those were better companions than the infernal dragons.
>
> Besides, the bodies of the damned, after the final judgement past, shall be so crowded together in that infernal dungeon that the holy scripture compares them to grapes in the wine press, which press one another till they burst.[75]

One of the great difficulties experienced by the author in subscribing to the doctrine of 'Eternal Misery' was its inconsistency with divine goodness. He was aware that in denying the doctrine of 'Eternal Torments', he might be accused of denying morality. He laboured over the point that in denying the doctrine of 'Eternal Torments', he was opposing a concept in God's governance which would be totally

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[73] Ibid., 37.

[74] Ibid., 37.

[75] [A Member of Church of England], *Eternal Punishment Proved to be Not Suffering but Privation and Immortality Dependent on Spiritual Regeneration* (London, 1817); dedicated to Lord Bishop of Llandaff; quoting Bishop Taylor's *Contemplations on the State of Man*, in its first appendix, 2-8.

inconsistent with divine goodness. The author in no way wanted to challenge the necessity for morality, but he cast doubts as regards the efficacy of the doctrine of 'Eternal Torments' as a means to enforce morality or to prevent gross sins. His doubts were crouched in the form of a statement:

> To shew that the doctrine is necessary to uphold morality, it must be proved that it is generally believed, and that, where believed, it is effectual to this purpose.[76]

For the purpose of this thesis, the significance of the Eternal Torments was to inform us of the dissemination of the doctrine as a means to enforce morality. But the author also rightly pointed out, the efficacy of the doctrine depended upon it being generally believed. As we shall see later in this section and in the rest of the thesis, the author was not alone in his doubts; others had questioned, challenged and rejected such basis of morality wrought by religious fears.

An example from the French materialist was Baron d'Holbach. He characterised religious morality as a vice because it was 'the art of intoxicating men with enthusiasm, so as to divert their attention from the evils with which their rulers load them here on earth'; it was falsity because 'men are made to hope that if they agree to being unhappy in this world, they will be happier in the next'.[77] In *Christianisme Devoile*, d'Holbach advocated natural morality as the ultimate alternative to religious morality:

> Instead of prohibiting debauchery, crime and vice, because God and religion forbid them, we ought to say that all excess is harmful to man's conservation, makes him despicable in the eyes of society, is forbidden by reason, which wants each man to conserve himself, and is forbidden by nature, which wants him to work for his lasting happiness.[78]

In his attempt to abandon religion and embrace atheism, D'Holbach's mission in his had managed to make Nature his new religion. To d'Holbach, what would have been odious as divine purpose became admirable as natural law.

As for Priestley, his doctrine of Necessity seemed to take the middle course between the conventional moral system based on the doctrine of Eternal Misery on the one hand, and the atheistic moral determinism of the French materialists on the

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[76] Ibid., 17.

[77] Baron d'Holbach, *Christianisme Devoile*, quoted by Basil Willey, *The Eighteenth Century Background* (London, 1940), 161.

[78] Quoted in Willey, *op. cit.*, 165.

other. Instead of the determinism that could degenerate into moral indifference, Priestley believed in the perfectability of motives and saw his role as a minister in exalting his fellow Christians to exert themselves towards moral perfection. By Necessity, Priestley meant in events where 'will' and 'choice' were supposed to play a part, there was a kind of mechanism which he likened to the working of a mechanical device like a balance.

> But still, if there be a real mechanism in both cases, so that there can be only one result from the same previous circumstances, there will be a real necessity, enforcing an absolute certainty in the event. For it must be understood that all that is even meant by necessity in a cause, is that which produces certainty in the effect.[79]

Once moral mechanism was in place, necessary determinism followed; that is to say, a person, given his particular state of mind, views of things, and strength of passion, would always voluntarily make the same choice and come to the same determination.

Priestley's reference to 'fixed laws of nature respecting the will' would be familiar language to the French materialists. Indeed, Priestley was charged for atheism on this point. Many, like Priestley's friend, Richard Price, or the Scottish common-sense philosopher, William Hamilton, would argue that absolute free will on the part of men to act, in the sense of being held fully accountable for one's action, was the only basis of morality and where rewards and punishments could be deemed just. Priestley would argue that if men were not placed in a state of moral discipline where motives were laid upon them, such scheme of retribution as Price's lost its effect. For Priestley, God was responsible for laying upon such motives in men to act in such a way towards the greatest happiness of all; thereby placing men in a state of moral discipline.

If d'Holbach saw in nature, and Priestley devised the doctrine of Necessity, for an alternative basis of morality, others had looked to reason as an alternative to religion for a basis of morality. Pierre Bayle (1647-1706) the French philosopher who asked whether it was possible for a society of atheists to live together in harmony, answered in the affirmative.[80] Behind this question was the search for an alternative basis of morality other than religion. Bayle concluded that it was possible for a society of atheists to live in harmony because they could arrive at a moral code

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[79] Joseph Priestley, *The Doctrine of Philosophical Necessity Illustrated* (London, 1782), 21.

[80] See discussions in this respect in James A. Harris, 'Answering Bayle's Question: Religious Belief in the Moral Philosophy of the Scottish Enlightenment', in Daniel Garber & Steven Nadler (eds.), *Oxford Studies in Early Modern Philosophy*, (Oxford, 2003), I: 229-253.

by the use of reason. Other seventeenth and eighteenth-century thinkers had asserted likewise, some of whom were religious men who saw in reason an endowment from God. For such thinkers, to employ reason as a basis for morality was in no way contradictory to being a believer. For instance, the remark of the Archbishop of Canterbury, John Tillotson (1630-94), in 1692 illustrates this point:

> Nothing ought to be received as a revelation from God which plainly contradicts the principle of natural religion. Nothing ought to be received as a divine doctrine or revelation without good proof that it is so.[81]

John Locke (1632-1704) who postulated on 'thinking matter' had a high regard for reason as a basis for morality:

> Upon this ground it is that I am bold to think that morality is capable of demonstration, as well as mathematics since the precise real essence congruity and incongruity of the things themselves be certainly discovered in which consists perfect knowledge.[82]

David Hartley (1705-57) in *Observations on Man* (1749) put forward the proposition that the empirical method employed by Newton to unravel the physical universe should likewise be employed to unravel the moral universe:

> The proper method of philosophising seems to be, to discover and establish general laws of action, affecting the subject under consideration, from certain select, well defined and well attested phenomena, and then to explain and predict the other phenomena by these laws. This is the method of analysis and synthesis recommended and followed by Sir Isaac Newton ... It is of the utmost consequence to morality and religion that the Affections and Passions (feeling and emotion) should be analysed into their simple compounding parts, by reversing the steps of the Association which concur to form them. For thus we may learn how to cherish and improve good ones, check and root out such as are mischievous and immoral, and how to suit our manner of life, in some tolerable measure, to our intellectual and religious wants.[83]

The same scientistic attitude was adopted by David Hume (1711-1776). Hume placed himself amongst the list of empirical philosophers like Locke, Shaftesbury, Mandeville, Hutcheson and Butler, who had all made some attempts to work out an empirical science of man. None of these empirical philosophers, however, had systematised a science of man, which was what Hume set out to achieve with *A Treatise of Human Nature* (1739). As the greatest Scottish (and

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[81] Quoted in Willey, *op. cit.*, 85.

[82] John Locke, *An Essay Concerning Human Understanding* (1690, London, 1993), iii: 5, sect. 33.

[83] Quoted in Willey, *op. cit.*, 47.

British) philosopher, Hume was himself most impressed by another Scottish philosopher, Hutcheson, in this endeavour. According to Hutcheson, man was endowed with more than the five senses associated with sense perception, and the moral sense was one of these additional senses. Just as our sense of taste will discern whether an orange is sweet or sour, our moral sense will discern in actions those which tend to happiness and those which tend to unhappiness; and these feelings are expressed by calling the actions 'good' or 'bad'. It was in this light that Hume characterised moral evil:

> The moral Evil or vice of a given Action is as the degree of misery and number of sufferers; so that, that Action is best which accomplishes the Greatest Happiness for the Greatest Number.[84]

It was in this respect that Jeremy Bentham (1748-1832) found in Hume's moral theory the inspiration for his doctrine of Utilitarianism. Joseph Priestley (1733-1804) in his political philosophy, had expressed similar views to those of Hume's, by stating that 'the "grand criterium" for settling all political questions should be: 'the good and the happiness of the members, that is to say the majority of the members, of a State'. Priestley saw in this 'grand criterium' the one general idea, which when suitably followed up, would throw' the greatest possible light on the whole system of politics, and of morals, and of theology'.[85]

This distaste was experienced not just by the author of *Eternal Punishment proved to be Not Suffering but Privation* (1817) who could only identify himself as 'a member of the Church of England', but by the protagonists studied in this thesis. Lawrence was most probably a dissenting Freethinking Christian, who was not unconcerned with morality, but would have found the enforcement of morality by the vista of the future state disagreeable and unacceptable. Combe, in his deployment of phrenology to derive a code of morality based on natural laws. Mary Shelley's humanist morality was to take rational morality one step further. Her vision of morality was not based on reason par excellence, but by affirming spirituality as an essence of humanity, and to assert morality as the outflow of human spirituality.

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[84] David Hume, *A Treatise of Human Nature*, (1739, Glasgow, 1962), iii: 3, sect.1.

[85] See Dan Eshet, 'Rereading Priestley: Science at the Intersection of Theology and Politics', *History of Science*, 39 (2001):127-159, 138-42.

V

This chapter highlights the inherent differences in the two systems of philosophy instituted by Plato and Aristotle. Plato influenced the formation of Christian doctrines, for instance, of the immaterial soul; whereas Aristotle's approach to knowledge was more directly useful in scientific enquiries. By highlighting the Platonic origin of religious beliefs on the one hand, and the dominance of the Aristotelian outlook in scientific enquiries on the other, this chapter helps to build up the argument that in some cases, where religion was opposing science, the opposition had its root in the differing approach to knowledge between Plato and Aristotle.

Secondly, a brief sketch of the history of dualism from Plato to Descartes provides the context to understand French materialism of La Mettrie, d'Holbach, and Dideort. Their materialism was born out of the extreme dualism in Cartesianism. By attempting to explain a greater body of living phenomena with the mechanical philosophy, Descartes paved the way for the French materialists to discard the notion of an immaterial soul altogether. In rejecting the soul, the French materialists rejected also the belief of a God as a spiritual being. In the case of the French materialists, materialism and atheism go hand in hand. In rejecting a religion founded on the belief of a spiritual God, the French materialists gave Nature the place of prominence, and in the case of d'Holbach, Nature became his new religion. In rejecting the contemporary religious morality

Lastly, this chapter has illustrated how the traditional belief in immortality depended upon the immateriality of the soul. Immortality as a religious concern also provided the religious basis for a morality in which the scheme of reward and retribution in the next life were the vehicle for enforcing morals in this life. In this respect, the immateriality of the soul, the belief in immortality, and the need for a basis of morality were inter-dependent to the extent that much more was at stake when the immateriality of the soul was challenged. In establishing this inter-dependence, this chapter provides the necessary background to understand the responses to scientific materialism arising in Britain in the early nineteenth century.

Two Theories of Life

> Life is the result of the organization—and the two are consequently connected, as cause and effect. ... Organization means the peculiar composition, which distinguishes living bodies; in this point of view they are contrasted with inorganic, inert, or dead bodies.
>
> William Lawrence, 1816[1]

> [Hunter] inferred that Life was a principle, active in all its functions, that by acting in various modes and degrees it produced the diversified phaenomena by which it is characterised. ... that there was a subtle substance belonging to living bodies, a principle of life, which had the amazing power of kindling and controlling the destructive element of fire, and regulating the actions of that still more sudden and powerful agent, electricity.
>
> That organization alone does not produce the functions which belong to life, must, I think, ... be granted.
>
> John Abernethy, 1817[2]

I

What is the nature of Life? How does matter, of which the body is composed, in plants, animals and humans, come to exhibit the phenomena of being alive? In other words, how does inanimate matter become animated? As discussed in the previous chapter, the varying views on the nature of life as expounded by Plato's *Timaeus* and Aristotle's *De Anima* have influenced the course of discourse on life-matter issues in western Christendom from Hellenistic to present times. Broadly speaking, Plato considered the cause of life as attributable to a principle or force totally distinct from matter. By contrast, Aristotle's theory of life was firmly focused on matter. To Aristotle, all matter was 'enformed' and he saw the essence of life as ultimately residing with the combination of matter and form – the organization of matter in the living body. A succinct summary of the varying positions derived from Plato's and

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[1] William Lawrence, *An Introduction to Comparative Anatomy and Physiology* (London, 1816), 115 &120.

[2] John Abernethy, *Physiological Lectures, exhibiting a general view of Mr Hunter's Physiology and of his Researches in Comparative Anatomy* (London, 1817), 29, 34 & 44.

Aristotle's theories of life was offered by a nineteenth-century physiologist, who remarked that of all 'the opinions that have yet been enumerated respecting the cause of vital phenomena, we have met with none in which they are not ultimately ascribed to one or other of two causes; to a certain organization of the materials of which the visible structure is composed, or to a principle totally distinct'.[3] At the turn of the nineteenth century, this visible structure was termed 'organization', referring to 'the peculiar composition which distinguishes living bodies'.[4]

'Is organization the cause or the effect of life?' This was essentially the physiological question at the heart of an intense debate that took place between William Lawrence (1783-1867) and John Abernethy (1764-1831), fellow professors at the Royal College of Surgeons in London, in the immediate wake of the Napoleonic wars. Lawrence, the eldest son of a prominent surgeon in Gloucester, was Abernethy's erstwhile pupil. As was the custom, Lawrence started lodging with Abernethy from 1799 when he was apprenticed to Abernethy, who was then assistant surgeon at St. Bartholomew's Hospital. When Abernethy became a lecturer on anatomy at St. Bartholomew's in 1801, he appointed Lawrence as his demonstrator, an office which Lawrence held for 12 years until 1814. While still an apprentice to Abernethy, Lawrence started contributing articles on anatomical and physiological subjects for Abraham Ree's *Cyclopaedia*, and continued until the work was finished in 1820. His erudition was evidenced by his translation of Professor Murray's *Arteries of the Human Body* from Latin, published in 1801, and of Blumenbach's *Comparative Anatomy* from German, published in 1808-9. His essay on *The Treatment of Hernia* was awarded the Jacksonian prize at the College of Surgeons in 1807; and he also contributed to journals like the *Edinburgh Surgical and Medical Journal*. Lawrence's progression through the surgical career was swift. In 1813, he was elected Fellow of the Royal Society, and received his first hospital appointment as assistant-surgeon at St. Bartholomew's. He was appointed surgeon to London Infirmary for Diseases of the Eye in 1814, and in 1815, to the Royal Hospitals of Bridewell and Bethlem. Admitted to membership of the Royal College of Surgeons in 1805, Lawrence was appointed a professor by the College in 1815, a year after Abernethy's professorial appointment by the Royal College. Nearly twenty years

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[3] John Barclay, *An Inquiry into the Opinions, Ancient and Modern, concerning Life and Organization* (Edinburgh, 1822), 21.

[4] Lawrence, (1816), 120.

Abernethy's junior, Lawrence became Abernethy's equal colleague at the age of thirty-two.[5]

Publicly, Lawrence had acknowledged his 'good fortune to be initiated in the profession by Mr. Abernethy, and to have lived for many years under his roof'. He assured his audience that 'however highly the public may estimate [Abernethy]', he had 'reason to speak still more highly of the Man and the Friend'.[6] It was no flattery on Lawrence's part, Abernethy was highly esteemed by his contemporaries, perhaps far more so than by posterity.[7] As a teacher, his lecture course on anatomy at St. Bartholomew's was so successful that a new lecture theatre was built to accommodate his classes. Despite his notorious brusqueness, Abernethy's private practice was a lucrative concern, attracting patients from high society and as far as from Scotland. Around 1816, Abernethy was probably at the zenith of his career; 'in addition to a successful school, a large and attached class, a solid and world-wide reputation', he might even have been offered a baronetcy by Lord Liverpool.[8] An honour Abernethy declined, a decision ascribed to his egalitarian principles by Macilwain, his biographer and a grateful former pupil. Referring to the controversy with Lawrence, Macilwain described it as 'the source of much suffering to Abernethy', especially because Abernethy had been Lawrence's mentor, helping him to develop his talents and fostered his progress and prospects in life.[9]

The controversy originated with two *Introductory Lectures* delivered in March 1816 by Lawrence as the newly appointed Professor of Anatomy and Surgery, at the Royal College of Surgeons in London. To an audience of aspiring young medical students, Lawrence expounded a theory of life based on 'organization',

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[5] *Dictionary of National Biography*, 32 (1892), 286-287; and L.S. Jacyna, 'Lawrence, Sir William, first baronet (1783-1867)', *Oxford Dictionary of National Biography*, (Oxford, 2004) [accessed 18 Nov 2004: http://www.oxforddnb.com/view/article/16191]

[6] Lawrence, (1816), 3. Privately, Lawrence described his sojourn with Abernethy as 'an inmate of his house; that Abernethy 'then resided in a small dirty, gloomy house looking into the Grave Yard of St. Mildred's Court in the Poultry, with a domestic establishment too mean for a general practitioner of the present day'. Letter of 25 February 1860, to Abernethy's godson, J.A. Kingdon (1828-1906), Lawrence's former house surgeon. See John L. Thornton, *John Abernethy* (London, 1953), 136. Abernethy moved from Mildred's Court to Bedford Row in October 1799; (Lawrence's apprenticeship started in February 1799).

[7] Three biographies eulogising Abernethy by his near contemporaries exist, while no biographies seem to have been attempted for Lawrence.

[8] George Macilwain, *Memoirs of John Abernethy* (3rd edn., London, 1856), 169-170. Testimony by Sir Benjamin Brodie of Liverpool's commission to confer a Baronetcy on Abernethy is cited as evidence.

[9] Ibid., 171.

supporting the claims of the French school of physiology.[10] Simply stated, life resided with the organization of the bodily matter; life was immanent in matter. Lawrence further praised the French government for their support in the research efforts of the French zoologists, naturalists and physiologists throughout the Revolutionary era. In contrast, Lawrence criticised the theory of life of the English school, based on an invisible vital principle as a 'pretended explanation' that advanced no understanding, and predicted it would lie 'in cold obstruction among the rubbish of past ages'.[11] Turning to Britain, Lawrence lamented that despite her colonies and commercial establishments, there were no public provisions to teach natural science or support research. These introductory lectures, written initially not with a view to their publication, were printed in consequence of repeated requests for copies.

Understandably, Abernethy considered Lawrence's 1816 lectures as a direct affront to his 1814 lectures, given under similar circumstances when Abernethy succeeded Sir William Blizard as Professor of Anatomy and Surgery. With these 'inaugural' lectures, subsequently published as *An Inquiry into the Probability and Rationality of Mr Hunter's Theory of Life,* Abernethy effectively styled himself as the champion of the Hunterian theory of life based on a vital principle. Not surprisingly, Abernethy used his 1817 series of lectures as the next available opportunity to defend the Hunterian theory against the criticism contained in Lawrence's 1816 lectures. Addressing his audience as 'Gentlemen of the Jury', Abernethy staged the lecture hall as a courtroom, and assumed the role of 'an advocate in the cause of Hunter' versus the French school and its English followers (branded as the 'Modern Sceptics').[12] Abernethy represented John Hunter's view as dependent on the 'vital principle', a subtle substance that animated matter and prevented the destructive process of decay from happening to the body. His defence of Hunter's theory was not conducted on scientific grounds alone, but became conflated with patriotic and moralistic appeals. Hunter was extolled as the founder of English physiology, and the 'French anatomists and physiologists' were decried

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[10] The lectures were probably attended by both surgeons-in-training and physicians-to-be. Abernethy's 1817 lectures addressed the same group of audience concerning 'the education and course of life of medical men'. Abernethy, (1817), 52.

[11] Lawrence, (1816), 168.

[12] Abernethy, *Physiological Lectures* (London, 1817),16; especially lectures 1, 2, 6, & 7 for Abernethy's rebuttal.

alongside 'French philosophers and wits, which had greatly contributed to demoralize the people'. His concluding remarks to his 'jury' of medical men foretold the reprobation that Lawrence was to suffer under the medical establishment:

> Whoever therefore inculcates opinions tending to subvert morality, benevolence, and the social interests of mankind, deserves the severest reprobation from every member of our profession, because his conduct must bring it into distrust with the public.[13]

Abernethy's 1817 lectures were published as *Physiological Lectures, exhibiting a general view of Mr Hunter's Physiology and of his Researches in Comparative Anatomy*, adding to the corpus of literature that fuelled the debate on the theory of life. The drama within the four walls of the Royal College of Surgeons intensified when it was Lawrence's turn to deliver a series of lectures on physiology in 1818. In fifteen lengthy lectures, Lawrence mounted a robust rebuttal of Abernethy's charges, substantiating his views with comprehensive accounts of the latest state of knowledge in physiology and pathology, in comparative anatomy and the history of species. If Lawrence's 1816 lectures assumed the appearance of academic impartiality, the tone of his 1818 lectures was overtly confrontational. Defiant and combative, Lawrence proceeded to clear himself of the allegation of being a party of the modern Sceptics, 'co-operating with a no less terrible band of French physiologists, in the diffusion of noxious opinions for the purpose of demoralizing mankind':

> I plead, not guilty. … Where, Gentlemen! shall we find proofs of this heavy charge – … What are the overt acts to prove this treason against society?... it can only be established by the clearest and most unequivocal evidence: not by bold assertions and strained inferences – not by declamatory commonplaces on morals – nor by all the pangs and complaints of mortified self-love.[14]

In the preamble to his defence, Lawrence staunchly decried the charges made against him as an infringement on the freedom of inquiry and speech, and that:

> However flattering it may be to my vanity to wear this gown [of a professor], if it involves any sacrifice of independence, the smallest dereliction of the right to examine freely … and to express fearlessly the result of my investigation, I would strip it off instantly.[15]

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[13] Abernethy, (1817), 52.

[14] Lawrence, (1819), 5.

[15] Ibid., 3.

Published under the title *Lectures on Physiology, Zoology and the Natural History of Man* in February 1819, these lectures seemed to precipitate 'the severest reprobation from every member of [his] profession' as Abernethy had forewarned. By April 1819, Lawrence was suspended from his appointment as surgeon to Bridewell and Bethlem Hospitals, and was threatened with a similar prospect by St. Bartholomew's. Reading between the lines from Lawrence's letters to the governors of the Hospitals, the grounds for the reprobation would appear to relate to the 1819 published lectures, which were considered to be subversive to morality and to the established Christian faith. Similar charges were levied against Lawrence by the religious establishment. The Reverend Thomas Rennell (1787-1824), in his office as the Christian Advocate of the University of Cambridge, published *Remarks on Scepticism* in 1819, addressing directly the religious implications of a theory of life based on organization contained in Lawrence's lectures. Rennell's *Remarks* coalesced voices from different sections of society into a religious force in decrying Lawrence's lectures as seditious and immoral. The drama culminated in a Chancery lawsuit of 1822, in which Lawrence failed to obtain protection from the law for his copyright over the 1819 lectures, on the grounds that they were blasphemous, and could receive no protection of the law.

The controversy was dissipated through Lawrence's resignation from his professorship, the suspension of his hospital appointments, and the procurement of a categorical retraction of those of his views which had caused such public outcry. Consequent to his retraction, Lawrence was reinstated by the hospitals and proceeded to have a distinguished surgical career, rising to become the Sergeant-Surgeon to Queen Victoria and was twice elected President of the Royal College of Surgeons. Public recognition of his achievements was crowned by his baronetcy, conferred shortly before his death in 1867.

Writing in 1892, Lawrence's biographer in the Dictionary of National Biography referred to the whole débâcle surrounding his 1816 lectures as follows:

> the remarks, which at the time excited so much feeling, now seem commonplace attempts to startle his audience, and are of no philosophic value.[16]

Scholarship in the last three decades tends to disagree with the assessment that

[16] *Dictionary of National Biography*, *op. cit.*, 286.

Lawrence's lectures were 'of no philosophic value'.[17] In many respects, these lectures are regarded as providing a crucial link in the development of a truly scientific physiology in England. Temkin (1963) examines the definition of 'Life' in the Lawrence -Abernethy debate against the wider European concern for this subject in the early nineteenth century. Goodfield-Toulmin (1969) gives an account of the debates over physiological method and explanation for the new-born science at that time, using the Lawrence episode as a case-study illustration. Wells (1973) studies the pre-Darwinian ideas on heredity and variation in Lawrence's lectures and discussed their influence on Darwin. Bynum (1974) devotes a chapter in his thesis on the 'Chain of Being' to the Lawrence affair, judging it an important episode in British natural historical sciences in the pre-Darwinian era. Figlio's (1976) masterly study of the metaphor of 'organization' teases out the philosophical, ideological and social nuances of the metaphor, illustrating how it supplies the 'scientific' vocabulary for an ideological dispute in the Lawrence-Abernethy debate. On a wider front, Jacyna (1983) uses the Lawrence episode to illustrate the two concepts of transcendence and immanence in cosmic and moral orders that were in currency in the early nineteenth century. Desmond (1989) examines Lawrence's ideas in the context of 'dissident' science in the pre-Darwinian era, aligning Lawrence with the radical social factions whose science was deemed 'politically revolutionary'. Referring to the growing literature on the Lawrence affair, Corsi (1988) remarks, 'Various commentators have pointed out that the multiform dimensions of this dramatic debate can only be understood within the context of English social, political and intellectual life at the end of the Napoleonic wars', but that such an exercise has not been seriously attempted.[18]

In response to Corsi's remark, two chapters of this thesis study the Lawrence episode in the context of science, religion and society in post-Napoleonic England.

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[17] O. Temkin, 'Basic Science, Medicine, and the Romantic Era', *Bulletin of the History of Medicine*, 37 (1963):97-129; J. Goodfield-Toulmin, 'Some Aspects of English Physiology: 1780-1840', *Journal of History of Biology*, 2 (1969):283-320; K.D. Wells, 'Sir William Lawrence, A Study of Pre-Darwinian Ideas on Heredity and Variation', *Journal of History of Biology*, 4 (1971):319-361; W.F. Bynum, 'Time's Noblest Offspring: the Problem of Man in British Natural Historical Sciences, 1800-1863' (Univ. of Cambridge D.Phil.,1974): III:118-160; K. M. Figlio, 'The Metaphor of Organization: An Historiographical Perspective on the Bio-Medical Sciences of the Early Nineteenth Century', *History of Science*, 14 (1976):17-53; L.S. Jacyna, 'Immanence or Transcendence: Theories of Life and Organization in Britain, 1790-1835', *Isis* 74 (1983):311-329. Adrian Desmond, *The Politics of Evolution*, (Chicago, 1989).

[18] Pietro Corsi, *Science and Religion, Baden Powell and the Anglican Debate, 1800-1860* (Cambridge 1988), 56.

The reaction of the religious establishment and society at large forms the focus of discussion in the next chapter, while this chapter addresses the response from the scientific establishment. The two theories of life as represented by Lawrence and Abernethy are first discussed, with special reference to their lectures delivered between 1814 and 1818. This is followed by an analytical review of the two opposing theories to highlight their substantive differences, and to allow for a critical assessment of the real issues that were at the centre of the controversy. Finally, this chapter examines other factors, political, social, and institutional, which helped to shape the response of the scientific establishment. By concluding that factors other than the absolute substance of the theories *per se* had influenced their reception by the scientific community, it paves the way for a more encompassing discussion of the social and religious response to the Lawrence-Abernethy debate in the next chapter.

II

At the turn of the nineteenth century, the science of life within the discipline of 'biology', was only at its inception. It was in 1802 that the term 'biology' was first coined by a German naturalist, Gottfried Reinhold. Lawrence's command of the scientific literature in German was evidenced by his translation of Blumenbach's *Comparative Anatomy* in 1808. It was therefore no coincidence that he was credited as the first to use 'biology' in English, to denote the study of 'organized beings or animals and plants, their morphology, physiology, origin, and distribution'. In his 1819 lectures, in preference to the term 'physiology', Lawrence referred to the fact that 'a foreign writer has proposed the more accurate term of biology, or science of life', thereby introducing the use of 'biology' in the scientific sense.[19] As an emergent science, biology was still formulating its first principles. The unifying concept of universal gravity in Newtonian physics, which explained both the movement of celestial bodies and the motion of earthly objects, became a standard for other sciences to emulate. For the new science of life at the turn of the nineteenth

[19] The *Oxford English Dictionary*, 2nd edn., on Compact Disc. The very first appearance of *biology* in English was in J. Stanfield's *Biography* in 1813, used in the sense of 'the study of human life and character', not as the science of physical life.

century, the search for a unifying concept focused on the nature of life. In other words, how does matter become alive?

This is the very question at the heart of the life-matter debate, and its history, stretching from ancient Greece to modern times, is succinctly chronicled by Thomas Hall in *Ideas of Life and Matter*. The generic solutions that have been offered are broadly designated as: (1) Life as identical; (2) Life as imposed; and (3) Life as organization.[20] The first model encompasses all the variations in perceiving life as immanent in matter. The second model owes its origin to Plato, who 'viewed *life-as-soul* as a distinct but nonmaterial entity', bonded to matter and inducing life as an ensemble of behaviour (*life-as-action*). The third model is pioneered by Aristotle, who equated life-as-soul with form, or the special arrangement which permits matter to become alive. A variation of this is to view life as an emergent consequence of organization. These three formulations of the life-matter relationship provide a useful framework for discussing the Lawrence-Abernethy debate.[21]

In the second of his 1816 *Introductory Lectures* entitled 'On Life', Lawrence summarised his views on the subject, which in parts corresponded to Xavier Bichat's.[22] The precocious son of a physician, Bichat (1771-1802) was born into a bourgeois family in Lyon. Trained in surgery, Bichat made significant contributions to anatomy and physiology in his short life, lived largely against the vicissitudes of the protean politics during the Revolutionary eras. His study of anatomy founded the science of histology, and with which he concluded that 'tissue', not organs, was the more basic structural and organizational unit of the body.[23] Behind each visible tissue, Bichat inferred an invisible 'property' or 'properties.' He viewed life as 'the

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[20] T. S. Hall, *Ideas of Life and Matter: Studies in the History of General Physiology 600 B.C. to 1900 A.D.*, 2 vols. (Chicago, 1969), I:18-9.

[21] Hall actually gives five formulations: (1) Life as identical; (2) Life as immanent; (3) Life as imposed; (4) Life as organization; and (5) Life as an emergent consequence of organization. Hall admits that (1) and (2) are not easily distinguishable. As a concept, (4) preceded (5); but the distinction is important; it is between equating life with organization, or to see life as the result of organization. Model (5) has prevailed in the post-evolutionary era. Lawrence is a subscriber of (5), but as the Lawrence controversy did not concern the distinction of (4) and (5), for the current discussion, the short-hand provided by the three classifications should be sufficient.

[22] Lawrence acknowledged both Bichat and Cuvier in his preface. Only Bichat is here discussed, because Bichat, more than Cuvier, addressed directly the nature of life. Cuvier's influence was more on the subjects of comparative anatomy, palaeontology, and the fixity of species.

[23] Elizabeth Haigh, *Xavier Bichat and the Medical Theory of the Eighteenth Century* (London, 1984).

assemblage of those functions which resist "death"',[24] and the vital functions are carried out by the tissues specially modified for such purposes. In the words of a later French physiologist, Bichat 'decentralised life and incarnated it in the tissues'.[25] These strands of Bichat's thought re-appear in Lawrence's lecture 'On Life'. Hailed as 'a specimen of the most clear and comprehensive logic we have ever read', the lecture was given an unreserved accolade by the *Edinburgh Medical and Surgical Journal*.[26] Lawrence starts by defining the science of anatomy as the study of animal structure and its organization, and physiology, the study of life and its functions. He proceeds to relate the two disciplines by describing 'functions as offspring of structure', and that 'Life is the result of the organization'. By organization, Lawrence means 'the peculiar composition, which distinguishes living bodies'.[27] In Lawrence's system, the world of matter is divided into two classes: 'living and dead'. Dead matter is all matter inorganic and inert, and 'is governed by physical laws, such as attraction, gravitation, chemical affinity; and it exhibits physical properties, such as cohesion, elasticity and divisibility'. He further distinguishes living matter as follows:

> Living matter also exhibits these properties, and is subject in great measure to physical laws. But living *bodies* are endowed moreover with a set of properties altogether different from these... These are the vital properties or forces, which animate living matter, so long as it continues alive, are the source of the various phenomena, which constitute the functions of the living animal body and distinguishes its history from that of dead matter.[28]

Vital properties of living bodies, such as sensibility and irritability, correspond to the physical properties of inorganic bodies, such as cohesion and elasticity. Lawrence conceives the vital properties as the means by which 'organization is capable of executing its purposes'. These purposes are the functions 'which any organ or system of organs executes in the animal frame; and life is the assemblage of all functions'. The relationship of the four expressions is summarised as: 'organization is the instrument; vital properties are the acting power, function is

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[24] Bichat: 'la vie est l'ensemble des functions qui résistent à la mort', from Bichat's *Recherches physiologiques sur la vie et la mort* (Paris, 1800); quoted in Thomas Rennell, *Remarks on Scepticism* (London, 1819), 60.

[25] The comment is by Claude Bernard (1813-1878), a prominent French physiologist who studied life as a physio-chemical phenomenon; quoted in Hall, *op. cit.*, II: 129.

[26] Bynum, *op. cit.*, 125, quoting *Edinburgh Medical and Surgical Journal*, 12 (1816): 58-67.

[27] Lawrence, (1816), 115.

[28] Ibid., 121; italics mine.

the mode of action, and life is the result'.[29] The causal relation between life and organization is: 'Life is the result of organization – and the two are consequently related, as cause and effect'.

Crucially however, Lawrence does not explain how matter becomes the living body in his scheme. Nor is he explicit in stating whether matter is already endowed with vital properties, or whether the endowment only applies to living *bodies*. What is unequivocal is that Lawrence thinks of living *bodies* as endowed with vital properties. But to answer at which point vital properties emerge in living matter or bodies, we have to turn to Lawrence's discussion of the characters of inorganic substances and living bodies.

> The character of an inorganic substance is to be found in the properties of its integral particles; ... that nature residing completely in each of the particles of which the whole is an aggregate. Thus a simple grain of marble has the same characters as an entire mountain. A living body, on the contrary, *derives its character from the whole mass*, from the assemblage of all the parts.[30]

These comments suggest that matter *per se* does not possess vital properties in Lawrence's view. The vital properties do not reside completely in each of the particles but emerge from the assemblage of all the parts. In other words, new properties develop from the gathering of the particles as a 'mass', conferring certain properties on the unit as a whole unattainable from individual particles taken on its own. 'Organization', for Lawrence, is the process whereby matter becomes living bodies; *ipso facto* it is the process of 'organization' which allows vital properties to emerge in living bodies. In conclusion, matter does not possess vital properties *per se*, but that 'living' characteristics of such matter is manifested by dint of organization. Such an interpretation is consistent with similar assertions in Lawrence's later lectures:

> The distinguishing characters of living beings will be found in their texture or organization; in their component elements; in their form; in their peculiar manifestations or phenomena; and in the limits, that is, in the origin and termination of their vital existence.[31]

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[29] Ibid., 120.

[30] Ibid., 124; italics mine. Lawrence's view in this respect was advanced for his time and has parallels in the physical science. Nowadays, there is an increased interest to study physical properties as an emergent consequence from the 'whole mass'. For instance, one grain of sand does not behave like liquid, but a mass of sand flows like liquid as in an hour-glass; or liquidity only applies to a mass of water molecules.

[31] Lawrence, (1819), 81.

Organization plays two vital roles as an 'instrument', the term used by Lawrence in his scheme. First, it is the instrument that allows vital properties to emerge. Secondly, organization is the instrument that maintains life, and vital properties are 'the means, by which organization is capable of executing its purposes'; these purposes are the vital functions that sustain life:

> Living bodies exhibit a constant internal motion, in which we observe an uninterrupted admission and assimilation of new, and a correspondent separation and expulsion of old particles. The form remains the same; the component particles are continually changing. While this motion lasts, the body is said to be alive; -- when it has irrecoverably ceased, to be dead. The organic structure then yields to the chemical affinities of the surrounding agents, and is speedily destroyed.[32]

Life is conceived as 'sustained' by a continuous process of assimilation of new, and expulsion of old, particles. The net effect of this process is to prevent the organic structure from yielding to the chemical affinities of the surrounding agents. Echoing Bichat, Lawrence sees life as 'the assemblage of functions that resist death'. To summarise Lawrence's views: organization configures (potentially) living matter into living bodies; the configuration allows vital properties to emerge; once the vital properties are 'activated', they are the means whereby organization executes those vital functions; these functions sustain life by arresting the process of death – the process whereby the organic matter yields to the chemical processes of its surrounding agents.

Granting the internal consistency of Lawrence's system, two important questions remain unanswered. The first is, between organization and vital properties, which has primacy? If organization brings vital properties into action, organization appears to have primacy over vital properties; that is, vital properties depend on organization to come into action. However, Lawrence also maintains that vital properties are the means whereby organization executes its purposes. On further analysis, the dependence of organization on vital properties is a dependence of a means to an end, whereas the dependence of vital properties on organization appears to be a *sine qua non*; that is, without organization, vital properties cannot be realised. In this respect, organization does have primacy over vital properties.

The second question, one often raised by Lawrence's critics, is how organization can be the cause of life, if the arrangement of living matter before and

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[32] Ibid., 82.

after death appears to be identical? Lawrence does not seem to have addressed this question directly. A clue to his likely reply may lie in his conception of the relationship between vital properties and vital functions, which he describes as:

> These *vital properties* are the *causes of vital functions* in the same way as chemical affinity is the cause of the combinations and decompositions executed among the component particles of bodies, or as attraction is the cause of the motion that occurs among the great masses of matter.[33]

Taking the assertions as a whole, the logical conclusion is that organization is not the direct cause of vital functions. Vital functions are directly caused by vital properties. Organization is the *cause* of life *only* insofar as, without organization, vital properties will not emerge. If death is the cessation of those vital functions that resist decomposition, death is the point upon which vital properties cease to act. The arrangement of the bodily matter before and after death remains the same, but at some point, the vital properties, denoted by Lawrence as 'the acting power', cease to act. Organization is the cause for vital properties to emerge; but it is *not* the cause for vital properties to cease to act. While organization can be described as the primary cause in the life-maintaining process, causing vital properties to emerge, which in turn, causes vital functions to take place, it is not responsible for switching off the 'acting power' of the vital properties. The following assertion from Lawerence's 1819 lectures reinforces this interpretation.

> to call life a property of organization would be unmeaning – it would be nonsense. The primary and elementary animal structures are endued with vital properties; their combinations compose the animal organs, in which, by means of the vital properties of the component elementary structures, the animal functions are carried on.[34]

While Lawrence asserts a causal link between organization and life, he does not assert any link between organization and death. The second question therefore makes no sense in Lawrence's scheme, for death is *not* a reversal of organization. Lawrence explains death as the termination of vital functions, a mechanism built into the system of life:

> The very nature of life is to produce, after a time, which varies in the different species, a state of the organs incompatible with the

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[33] Lawrence, (1816), 150; italics mine.

[34] Lawrence, (1819), 71.

> continuance of their functions; this mode of termination, by death, is therefore one of the laws, to which organic beings are subject.[35]

If Lawrence's views on life and death are acceded to, then the question on the origin of life-giving functions should centre on why vital properties emerge and why they cease to act. On the origin of life, Lawrence has made two important remarks. Positively, he asserts that only living beings can beget living beings, and that the origin of life lies with the parents:

> From these parents, they have received the vital impulse; and hence it is evident that in the present state of things, life proceeds only from life and there exists no other but that, which has been transmitted from one living body to another by an uninterrupted succession.[36]

Negatively, Lawrence admits that 'in physiology, as in the physical sciences, we quickly reach the boundaries of knowledge whenever we attempt to penetrate the first causes of phenomena'.[37] The parallels Lawrence tries to draw between physiology and physical sciences are made even more specific in relation to vital properties:

> We are thus led to admit the vital properties, ... as causes of the various phenomena; in the same way as attraction is recognised for the cause of various physical events. We do not profess to explain how the living forces in one case, or attraction in the other, exert their agency.[38]

In Lawrence's opinion, to ask how the vital forces exert their agency is an ultimate question that takes us to the boundaries of knowledge. The parallel with Newton is that Newton has explained how motion is due to gravitational attraction, but has left the question of the cause of gravity unanswered. Lawrence's counsel in the face of such ultimate questions is one of acceptance:

> The most we can accomplish is, to make gradual conquests from the territories of ignorance and doubt; and to leave under their dominion those objects only which our reason has not reached, or is not able to reach.[39]

To acknowledge these ultimate boundaries to knowledge is, for Lawrence, more intellectually honest and methodologically sound than to invent hypothetical

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[35] Lawrence, (1816), 145.

[36] Ibid., 141.

[37] Lawrence, (1819), 71.

[38] Lawrence, (1816), 165.

[39] Lawrence, (1819), 71.

and unexaminable entities as supposed causes. Lawrence describes an immaterial vital principle as a 'pretended explanation' and 'a reference to something which cannot be received as a deduction of science, but must be accepted as an object of faith'.[40] He probably means that given that an immaterial principle cannot be studied by the methods of science, it is a theory that would not assist in advancing knowledge. To distinguish between *philosophy* and *science*, Lawrence maintains that he 'only oppose[s] such hypotheses when they are adduced with the array of philosophical deduction, because they involve suppositions without any ground in observation and experience, the only sources of our information in these subjects'.[41] Lawrence is clear that the future of physiology lies in it being established as a credible science, as distinct from a discipline for philosophical speculation.

> ... the science of physiology, in its proper acceptation, is made up of the facts, which we learn by observation and experiment on living beings, or on those which have lived; of the comparison of these with each other; of the analogies which such comparison may discover, and the general laws to which it may lead.[42]

Furthermore, an appeal to a vital principle will neither advance physiology as a science, nor natural theology, for it is again an illustration of man's ready recourse to a divine being (a 'God of the gaps') when no other explanation is obvious:

> ... this hypothesis, or fiction of a subtle invisible matter, animating the visible textures of animal bodies, and directing their motions, is only an example of that propensity in the human mind, which had led men at all times to account for those phenomena, of which the causes are not obvious, by the mysterious aid of higher and imaginary beings.[43]

Lawrence's acceptance of limits is, nonetheless, tempered by a sanguine caution that to say 'we can never arrive at the first cause of the vital phenomena would be presumptuous'. But in the final analysis, his lecture 'On Life' ends in a note of acquiescence with Lucretius' remark in Latin:

> Ignoratur enim quae sit natura anima;
> Nata sit, an contra, nascentibus insinuetur,
> Et simul intereat nobiscum morte dirempta ,
> An tenebras orci visat, vastasque lacunas.[44]

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[40] Lawrence, (1816), 168.

[41] Ibid.,177.

[42] Ibid.,178.

[43] Ibid.,173.

[44] Lawrence, (1816), 178; rendered in English: 'It is not known what the life-soul is by nature, whether it is born or on the contrary inserted into those being born, and perishes at the same time with

In Lucretius' terms, Lawrence's view falls loosely into the category that one is born with the life-soul, and Abernethy's view is that the life-soul is 'inserted into those being born'. Of the three models for life-matter relations discussed earlier, Lawrence's theory follows most closely that of life as an *emergent consequence* of organization, as a variation of the model pioneered by Aristotle, which equates life with *form*. 'Organization' in nineteenth-century physiology referred to the special 'form' whereby matter is arranged to permit it to behave in a 'lively' manner. In contrast, Abernethy's theory of life, which considers the life-soul as a vital principle superadded to the material body, is Platonic in origin. The inherent differences between the Platonic and Aristotelian approaches, between whether life is transcendent to, or immanent in matter, were at the heart of the disagreement between Abernethy and Lawrence in this debate.

III

In propounding a theory of life based on a vital principle, Abernethy insisted that he was upholding Hunter's theory of life. John Hunter (1728-1793) was the last runt of thirteen children born to a 'little laird' in Long Calderwood, near East Kilbride; only seven of the children survived their parents. Partly due to his poor constitution, Hunter was largely self-taught. Brother William, John's senior by ten years, had a more formal education and the fortune to be apprenticed to the celebrated Scottish physician, William Cullen. It was through the tutelage of his brother William that John became a surgeon, with his own practice. Outside surgery hours, John the anatomist dissected and classified; at death, his anatomical collections were of a scale worthy of a museum. Hunter the physiologist published treatises on diseases and offered private lectures; it was through attending these lectures that Abernethy became his disciple.[45]

But the so-called Hunterian theory of life, which Abernethy so staunchly defended as 'not only probable and rational, but also verifiable', was to Lawrence, 'no where to be found in the published writings of John Hunter'.[46] Abernethy's

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us, rent apart by death, or whether it visits the darkness of Hades, and the vast watery depths.' Lawrence's erudition is evidenced by his wide-ranging knowledge of the literature on life-matter issues and allusions to ancient and foreign philosophers.

[45] See John Kobler, *The Reluctant Surgeon* (London, 1960).

[46] Lawrence, (1819), footnote, 73.

exposition remains an interpretation of Hunter's ideas, interpolated with his own opinions on the subject. The interpolation was perhaps inevitable, given that Hunter was not renowned to be a clear writer, a deficiency Lawrence attributed to Hunter's 'unfortunate want of early education'.[47] Abernethy admitted that there was 'an obscurity in Mr Hunter's writings, the result even of perplexity of thought'.[48] This perplexity remained evident to the anonymous reviewer of *Edinburgh Review*, whose forthright criticism of Abernethy's 1814 lectures, published as *An Enquiry into the Probability and Rationality of Mr Hunter's Theory of Life*, was unsparing:

> ... really these Lectures appear to us exceedingly deficient, both in sound reasoning and good taste;. They are a collection of bad arguments, in defence of one of the most untenable speculations in physiology; interspersed with not a little bombast about genius, and electricity, and Sir Isaac Newton.[49]

The *Quarterly Review*, a Tory answer to the Whig *Edinburgh Review*, published a lengthy survey by the Reverend George D'Oyly, of the major literature in the Lawrence-Abernethy debate up to July 1819.[50] D'Oyly praised Abernethy as 'a medical gentleman of the highest eminence'; and endorsed his espousal of Hunter's theory of life, which D'Oyly paraphrased as '*some* principle of activity added by the will of Omnipotence to organized structure', as a theory to 'which our reason can carry us'.[51] D'Oyly was meriting the theory for its ability to support the religious belief of an immortal soul superadded to the body, allowing scope for an Omnipotent God to be the First Cause. As a scientific theory, the *Edinburgh Review* judged that it was of little merit, but as D'Oyly pointed out, Abernethy's theory was the one that could easily be made to dovetail with the religious belief of an immortal soul. Despite the logical flaws apparent in Abernethy's exposition of life, it deserves an equal hearing to Lawrence's for it was the theory that had won the support of the

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[47] Ibid., 73.

[48] Abernethy, (1814), 127.

[49] Anon.,'Abernethy on the Vital Principle', *Edinburgh Review,* XXIII (1814), 384-398, 384. Though not identified in the *Wellesley Index*, Dr John Gordon who wrote a lengthy article against phrenology for the *Review* in 1815 is thought to be the author. See Figlio, *op. cit.,* footnote 45.

[50] The *Edinburgh Review*, founded by Francis Jeffrey in 1802, began a new era in public criticism. Whig in its political leaning, the *Edinburgh* was not afraid of innovations in politics. Under the editorship of Jeffrey, and with the help of contributors like Henry Brougham and Sydney Smith, the circulation increased steadily from 2,5000 copies for its first issue on 10 October 1802 to over 10,000 copies by 1810. The *Quarterly Review* was founded in 1809, largely through the influence of Sir Walter Scott, to rival the *Edinburgh*. Scott expected the *Quarterly*, would counteract 'the base and rascally politics of Jeffrey and that peace-mongering squad who would lay us at the foot of France'; quoted in Mary Cosh, *Edinburgh, the Golden Age* (Edinburgh, 2003), 277.

[51] George D'Oyly, *Quarterly Review*, 22 (1819): 1-34, 2.

religious and scientific establishments, in a crucial period of intellectual history for the development of life science in England.

As if to clear the grounds, Abernethy's exposition of Hunter's theory in his 1814 lectures began by refuting the theory of life based on organization:

> In surveying the great chain of living beings, we find life connected with a vast variety of organization, yet exercising the same functions in each; a circumstance from which we may I think naturally conclude, that life does not depend on organization.[52]

Abernethy's interpretation on 'organization' seemed to be guided by a similar claim in Hunter's *Essays and Observations*, published posthumously in 1861:

> In contradiction to organization being a cause, we find in general that the least organized are the most tenacious of life. ... the most imperfect animals are the most difficult to be killed, when the actions of the parts are stopped upon which life is continued. But this is not constantly so, therefore peculiarity of organization is not the least necessary.[53]

Hunter continues by giving a 'still stronger proof that organization is not essential to life' – 'that different animals with the same organization are very different with respect to their being easy or difficult to be killed by the stoppage of those operations that continue life'. For instance, an eel will live out of water for many days, while a mackerel dies instantaneously.[54]

Both Bichat and Hunter were famous for their anatomical labours as the basis of their knowledge; yet the two masters drew very different conclusions from their studies. Bichat, in the Aristotelian fashion, focused on matter and its form, and concluded that life was dependent on organization. Hunter, in the Platonic cast, deduced that life could not have been caused by organization; that the study of the structure of living bodies would not yield the secret of life, for the simplest life-forms were actually the most tenacious of life. Hunter's observations led him to assert that 'whatever Life is, it most certainly does not depend upon structure or organization'.[55] The size of Hunter's anatomical collections justifiably lent him authority when he drew conclusions about the phenomena of life from his studies.[56]

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[52] Abernethy, (1814), 16.

[53] Hunter, *Essays,* I:114.

[54] Ibid., I:114-5.

[55] Ibid., I:114, italics mine.

[56] Hunter's anatomical collections conferred on the Royal College of Surgeons consisted of 10,563 specimens; those subsequently added by the College amounted to 12,347 as in 1846. Lawrence, *Hunterian Orations* (London, 1846), 13.

However, the structural view of organization by Hunter the anatomist has to be balanced against other levels of organization identified by Hunter the physiologist. In *Principles of Surgery*, Hunter discusses life and organization in a way, which suggests that his view of organization on another level is closer to Lawrence's than Abernethy has appreciated.

> Animal matter is endowed with a principle called ... life; ... [which] appears to be something superadded to this peculiar modification of matter; or this modification of matter is so arranged that the principle of life arises out of the arrangement, and this peculiar disposition of parts may be destroyed, and still the modification, from which it is called animal matter, remains the same.[57]

It appears that there are three levels of organization in Hunter's terminology: (1) modification, (2) arrangement, and (3) structure. In *Surgery*, Hunter spoke of matter as something which could be differently *modified* and *arranged*. In *Essays*, Hunter discusses matter as differently *structured*. By modification, Hunter means the way matter is organized into different life forms, for instance, into vegetable or animal. He dismisses the possibility of life emerging from modification because at point of death, that peculiar modification that has fashioned matter into different life forms remains unchanged. Hunter concludes, therefore, 'that the principle called life cannot arise from the peculiar modification of matter, because the same modification exists where this principle is no more'.[58] Likewise, Hunter dismisses the possibility of life emerging at the gross anatomical level based on structure, as pertaining how different parts of an animated body are assembled. In respect of these two levels of organization, Hunter's position is 'vitalist'; in that it looks on life as imposed – or superadded – and not as emergent.[59] However, Hunter admits that it is conceivable that in certain living bodies, matter is 'so arranged, that the principle of life arises out of the arrangement'. Tentatively, Hunter continues in the following vein:

> If the latter be the true explanation, this arrangement of parts, on which life should depend, would not be that position of parts necessary to the formation of a whole part or organ [at the anatomical level], ... but just a peculiar arrangement of the most simple particles,

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[57] John Hunter, *Lectures on the Principles of Surgery*, in *The Works of John Hunter*, ed. James Palmer, 4 vols. (London, 1835), I:221-2. Volume I contains a biography of Hunter by Palmer, and *Lectures on Surgery*, delivered in 1786 and 1787 by Hunter. The texts are based on the short-hand notes of Nathaniel Rumsey of Chesham, complete with examples, which led the editor to suppose that Rumsey had access to the Hunterian manuscript. Volumes II-IV are a collection of Hunter's published treatises, with editor's notes.

[58] Hunter, *Surgery*, 221.

[59] See discussion in Hall, *Ideas of Life and Matter*, II: 111-2.

> giving rise to a principle of preservation; so that matter so arranged could not undergo any destructive change till this arrangement were destroyed, which is death.[60]

Hunter's speculation on organization at the *corpuscular* level as 'a peculiar arrangement of the simplest particles, giving rise to a principle of preservation' is in fact close to Lawrence's definition of organization [61]. As a follower of Bichat, who pioneered the science of histology, Lawrence probably looked at tissues as the most fundamental units. Hall's summary of Lawrence's views seems to confirm this: 'The uniqueness of living systems resided, according to Lawrence, in the properties of their textures or tissues, these properties permitting life-as-action. He saw the properties of each tissue as correlated with its distinctive (physicochemical) organization'. [62]

Abernethy would appear to understand Hunter's view on organization *only* on the structural level, and refuted organization as the cause of life based on the observations yielded by comparative anatomy. Though Lawrence perceives organization as more than mere structure, he argues that 'comparative anatomy affords the strongest and most numerous proofs of the dependence of function on structure'. To Lawrence, 'every variation of the construction of an organ is accompanied with a corresponding modification of function, and whenever an organ ceases to exist altogether, its office also ceases'.[63] For Abernethy, 'the natural inference to be drawn from this great chain of being' is that 'life must be something independent of organization, since it is able to execute the same functions with such diversified structure, and even in some instances with scarcely any appearance of organization at all'.[64] A comment from Abernethy's 1817 lectures further confirms this: 'Those who think the phenomena of life depend on organization, must necessarily suppose as many kinds of life as of structures, and still assign no cause to the production of such structures'.[65] A structural view of organization was reiterated in the Abernethy's 1819 *Hunterian Oration*: 'Mr Hunter was convinced that life was not the result of organization; and though many may have conjectured life to be something not dependent on *structure*, Mr Hunter was the first who deduced the

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[60] Hunter, *Surgery*, 222.

[61] Hall uses the term *corpuscular* to denote this level of organization.

[62] Hall, *op. cit.*, II: 229.

[63] Lawrence, (1816), 172.

[64] Abernethy, (1814), 48.

[65] Abernethy, (1817), 269.

opinion'.[66] To Abernethy, life is something independent of *structural* organization, and that something is what Abernethy calls the *vital* or *living* principle.

In Abernethy's interpretation, Hunter 'inferred that Life was a principle, active in all its functions, that by acting in various modes and degrees it produced the diversified phenomena by which it is characterised'.[67] Hunter's own words on the living principle are not particularly illuminating. In *Surgery*, Hunter states that animal matter is endowed with a principle called life. He reasons that since life does not arise from modification, life then appears 'to be something superadded to this peculiar modification of matter'. In *Essays of Observations*, Hunter describes the living principle as 'not simply diffused, but it is combined, or makes one of the constituent parts of the whole, and the variety of action arises from the construction of the parts'.[68] To the question 'How do parts of a living body grow into one another', Hunter's reply is:

> I should suppose that this is entirely owing to the simple Living Principle; that whenever two parts which have an affinity ... come into contact, ... the effect on both must be the same, ... The result of which is, that they come into mutual opposition, vessel to vessel, and the two become one substance.[69]

Hunter's remarks suggest that he considers the living principle the key to building matter into a living body. His views on matter shed light on what the role of the living principle may be. 'The universe has been divided into *Matter* and *Spirit*', according to Hunter:

> Matter being endowed with properties which become the cause of our sensations, and the modes of action of those properties being hardly known, these properties become the foundation of the idea of spirit,

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[66] Abernethy, *Hunterian Oration* (London, 1819), 29; italics mine.

[67] Abernethy, (1817), 29.

[68] John Hunter, *Essays and Observations on Natural History, Anatomy, Physiology, Psychology and Geology by John Hunter,* ed. Richard Owen, 2 vols. (London, 1861). The *Essays,* compiled from the notes copied by William Clift, Hunter's last assistant, assumes a loose-jointed character, though the range of topics covered is impressive. My perusal of the volumes indicates that in some 400 pages of notes, Hunter made observations of each part of the animal economy, and drew comparisons amongst the different species in the chain of being. He also reflected on meta-issues like the distinction between matter and spirit. There are sections on observations on psychology related to the mind and consciousness, on palaeontology as a study of the history of species through fossils, on phytology, the study of physiology of vegetable life, and a section on practical anatomy. The second volume containing some 500 pages of notes, is a treatise on comparative anatomy, with detailed classification into species of the animal kingdom, and the comparison of animal forms in relation to their economy

[69] Hunter, *Essays*, I:114-5.

> viz. a species of intelligent quality that presides over and directs the actions of Matter.[70]

Hunter then comments on the distinction between common and animal matter. In the former, that as 'causes and effects of matter seem to be entirely connected with matter itself, and to be a property inherent in and inseparable from it, ... the presiding 'spirits' are every day vanishing'. However, 'because the action of animal matter is much more extensive and has two states, -- the living and the dead; and as there is no difference in the visible mechanism between the two states, it was natural to suppose that there was what is called an *animating* or *living* spirit'.[71] Inferring from these comments, the animating spirit is the intelligent quality that presides over and directs the actions of living matter. It is something superadded to animal matter when it is alive, and absent when it is dead. Hunter admits that 'this simple principle of life can with difficulty be conceived', and he proceeds to draw parallels between 'this simple principle' and magnetism:

> ... but to show that matter may take on new properties without being altered in itself as to the species of matter, ... Perhaps magnetism affords us the best illustration we can give of this. A bar of iron without magnetism may be considered like animal matter without life; set it upright and it acquires a new property, of attraction and repulsion, at its different ends.[72]

Hunter's analogy of the living principle with magnetism would appear to have heavily influenced Abernethy in his interpretation of the vital principle. In his 1814 lectures, Abernethy aims 'to show that Mr Hunter's Theory of Life was verifiable, and that it afforded the most rational solution of the cause of irritability, which had hitherto been offered to the public'.[73] The property of *irritability* is crucial in Abernethy's understanding of living matter. He reasons that all common matter has the property denoted by Newton as *vis inertiae*, namely, 'an indisposition to move unless compelled to motion, and a disposition to continue in motion unless retarded'.[74] Irritability counteracts *vis inertiae*, and is the singular sign that the matter is alive. By inquiring into Hunter's opinions, Abernethy deduces that the cause of irritability:

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[70] Hunter, *Essays,* I:7.

[71] Hunter, *Essays,* I:6-7; italics mine.

[72] Hunter, *Surgery*, 222.

[73] Abernethy, (1814), 79.

[74] Ibid., 40.

> ... is the effect of some subtile, mobile, invisible substance, superadded to the evident structure of muscles, or other forms of vegetable and animal matter, as magnetism is to iron, and as electricity is to various substances with which it may be connected.[75]

Since common matter is inert, there is 'the necessity of supposing the superaddition of some subtile and mobile substance'.[76] He asserts that 'Mr Hunter doubtless thought', that 'in magnetic and electric motions, as subtile invisible substance, of a very quickly and powerfully mobile nature, puts in motion other bodies which are evident to the senses, and are of a nature more gross and inert'.[77] Abernethy seems to have identified the living principle as the 'subtile, mobile, invisible substance'; and he draws a close analogy between this invisible substance and electricity as follows:

> Electricity may be attached to, or inhere, in a wire; it may be suddenly dissipated, or have its powers annulled, or it may be removed by degrees or in proportions, ... So life inheres in vegetables and animals; it may sometimes be suddenly dissipated, ... though in general it is lost by degrees, ... The motions of electricity are characterised by their celerity and force; so are the motions of irritability. The motions of electricity are vibrating; so likewise are those of irritability.[78]

To Abernethy, the phenomena of life denoted by *irritability* closely corresponded to those phenomena on dead 'living-matter' procured by electricity.[79] Indeed he comes close to *identifying* the vital principle as electricity by suggesting:

> If the vital principle of Mr. Hunter be not electricity, at least we have reason to believe it is of a similar nature, and has the power of regulating electrical operations.[80]

However, elsewhere in his 1814 lectures, Abernethy inserts his caveat that 'it is not meant to be affirmed, that electricity is life'.[81] Rather, he maintains that by comparing the vital substance with electricity, it might be possible 'to prove that Mr Hunter's Theory is verifiable'. The power of electricity is verifiable though its substance is invisible. Abernethy conjectures that the vital substance, which causes

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[75] Ibid., 38.

[76] Ibid., 41.

[77] Ibid., 39.

[78] Ibid., 42.

[79] The contemporary speculation of the analogy between irritability and electricity is further discussed in Chapter seven of this thesis.

[80] Abernethy, (1814), 88.

[81] Ibid., 51.

irritability in living matter, by analogy to electricity, can also attain the status of being verifiable:

> ... by shewing that subtile substance [that is, electricity] of a quickly and powerfully mobile nature seems to pervade every thing, and appears to be the life of the world; ... therefore it is probable that a similar substance pervades organized bodies, and produces similar effects in them.[82]

In his 1817 lectures, Abernethy perhaps makes it somewhat clearer that not only does he not mean 'to affirm that electricity is life', but that he thinks the vital principle is able to regulate the power of electricity:

> If science were eventually to demonstrate that heat, light and electricity are different things, that there are various kinds of subtile substances, then I should be obliged to suppose that there was also a subtle substance belonging to living bodies, a principle of life, which had the amazing power of kindling and controlling the destructive element of fire, and regulating the actions of that still more sudden and powerful agent, electricity.[83]

In the final analysis, Abernethy probably thinks that the relationship between electricity and the vital principle is one of similarity rather than identity. What is clear, however, is that the idea of the vital principle being electricity or like electricity is Abernethy's and not Hunter's.

Lawrence was scathing in his critique of Abernethy's hypothesis which likened vital principle with electricity:

> It is singular also that the vital principle should be like both magnetism and electricity, when these two are not like each other. ... The truth is, there is no resemblance, no analogy between electricity and life: the two orders of phenomena are completely distinct; they are incommensurable. ...Electricity illustrates life no more than life illustrates electricity. We might just as well say that an electrical machine operates by means of a vital fluid, as that the nerves and muscles of an animal perform sensation and contraction by virtue of an electric fluid. ... Identity and similarity of cause can only be inferred from identity or resemblance of effect.[84]

In his 1819 lectures, Lawrence denounced the 'electro-chemical doctrine of life', and stated that he could not 'adopt this hypothesis until some proof or reasoning of a very different nature from any hitherto produced shall be brought forwards'.[85] The

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[82] Ibid., 51.

[83] Abernethy, (1817), 35.

[84] Lawrence, (1816), 169-170.

[85] Lawrence, (1819), 5.

supposition that the body contained an invisible matter or principle was, to Lawrence, driven by the wish to 'draw aside the veil from nature, to display the very essence of the vital properties and to penetrate their first causes'. His critique of vital principle represented the other side of his argument that one should be content to stop at the point of reaching questions of the first causes.

Though Lawrence did not name Abernethy as the author of the theory that he publicly discredited, the reference was plain for all to deduce. In the very same lecture theatre that Lawrence decried the 'vital principle' in 1816, Abernethy had postulated his Hunterian Theory of Life in 1814. Not only had Lawrence discredited Abernethy on a professional level, but judging from the course of the debate, wider issues were at stake for Abernethy than mere personal honour bound up with his espousal of a theory that was being discredited by his erstwhile pupil.

IV

When Abernethy delivered his 1814 lectures, no one had the assurance of an imminent closure of the long-lasting state of enmity that had existed between Britain and France. When Lawrence delivered his lectures in 1816, the decisive victory of Waterloo had assured a more long-term peace with France, but anti-French sentiments, that had been part of the national psyche for over a quarter of a century, remained strong in the wake of the Napoleonic wars. Lawrence's 1816 lectures were given against the economic distress of the post-war depression in which rioting was common, and the fear of Jacobinism was intensified by the riots spreading from rural countryside to industrial areas. Patriotism apart, Lawrence's Francophile sentiments liberally expressed in his 1816 lectures, however sincere they might be, were ill judged.

His admiration for the achievements of individual French scientists was coupled with his praises of the foundation of such institutions as the *Académie Royale des Sciences*, and of the *Jardin des Plantes*, a botanical and zoological museum, which were expressly supported by the French government. The twenty volumes of the *Annals of the Museum of Natural History*, completed by French naturalists in just a few years, represented to Lawrence 'one of the most valuable

accessions that zoology had ever received'.[86] A voyage of discovery to New Holland and the adjacent countries was commissioned by the French government which enabled Peron to seal his achievements in natural history by obtaining over 2,500 new species and more than 100,000 animal specimens. In a footnote to his 1816 lecture, Lawrence remarked that 'for the advancement of natural knowledge, and the uniform encouragement of talent', 'science will ever be indebted to the *late French government'*.[87] Furthermore, Lawrence's eulogy of the French establishments was juxtaposed against some scathing remarks of their English counterparts:

> I return to our own country, and am ashamed to find, that although her colonies and commercial establishments are found in every region and every climate, we have no collection of living animals, no museum of natural history, no public institution for teaching natural sciences... what excuse shall we find for the modern universities as they are called, of a nation [which] fancies itself the most enlightened in Europe?[88]

Lawrence's declaration of Francophile sentiments at the expense of the English establishments seemed to have excited Abernethy to retaliate for patriotic reasons. In styling himself as the custodian of Hunter's legacies, Abernethy acted as if he were defending a national heritage. He pleaded to his 1817 audience 'for the restitution of a great and accumulated income of reputation' due to Hunter for his literary and intellectual properties that Lawrence had defamed.[89]

While Lawrence was correct in stating that the state support in France had greatly advanced the knowledge of life science in the half-century before the end of the Napoleonic wars, Abernethy was keen to stress that it was wars that had motivated such a support. Louis XIV, 'from being continually engaged in war', seemed first to 'have clearly discerned the nature and importance of surgery, and the proper measures by which it might and ought to be promoted'. Apart from establishing hospitals, colleges, and professorships, the government of Louis XIV also decreed that 'bodies for dissection should be liberally supplied'.[90] This state of affairs continued under the Revolutionary government. An entry in Bichat's *Recherches Physiologiques* illustrates the support of the French government in this

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[86] Buffon, Daubenton, Vicq D'Azyr, Lacepede, Latreille, Lamarck, Geoffroy St. Hilaire, Daudin, Brongniart, Peron, Dumeril, and Cuvier topped his list. Lawrence, (1816), 72.

[87] Ibid., 73; footnote on Peron; italics mine.

[88] Ibid., 87.

[89] Abernethy, (1817), 16.

[90] Abernethy, (1819), 20.

protean period of French politics and that it was not without an extra gruesome aspect: 'I had authority, during the winter of the year 7 (1798) to make different experiments upon the bodies of those guillotined. They were at my disposal thirty or forty minutes after the execution'. In less than six months, he had dissected over 600 bodies.[91] To Lawrence's charge that he was 'blinded by national prejudice to the merits of persons of other countries', Abernethy's retort was:

> The sons of science may more particularly be regarded as of one family, and their residence in different countries cannot annul their fraternity. Yet surely it is allowable in one to suppose that the notions of our brother physiologists in France may have been influenced by the state of public opinion in that country.[92]

Though not explicitly stated, it would appear that in Abernethy's mind, the state support of the French government for its scientists might have the tendency of 'corrupting' the science, and it was legitimate to hold French physiology and French politics as equal suspects. In Abernethy's 1817 lectures, there was next to no discussion of the French school of 'Life-as-organization' on scientific grounds, instead moral arguments were employed in denouncing the French school:

> That in France, in a nation where the writings both of its philosophers and wits have greatly contributed to *demoralize* the people, I do not therefore wonder that those of their anatomists and physiologists should represent the subject of their studies in a manner conformable to what is esteemed most philosophical or clever.[93]

What Abernethy failed to note was that the political conduct of the French scientists was singular amongst all the groupings of intellectuals, such as writers, artists, or philosophers. The historian Charles Gilliespie highlights that the French scientists at the end of the *ancien regime* were the only group who were 'pressed into the service of each successive regime', without regard to their political distinctions of left and right, or of liberty and tyranny. The state wanted 'instrumentalities, powers but not power' from the scientists. The scientists wanted support in the form of funds, instutitionalization, and authority for the legitimation for its existence and activities, -- in short, professional status. Between the French government and her scientists, the relationship was 'one of partnership', not 'partisanship'. In return of their uncritical support to the government, the French scientists received increasing

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[91] Bichat, *Recherches Physiologiques sur la vie et sur la mort* (Paris, 1800); quoted in S. Vasbinder, *Scientific Attitudes in Mary Shelley's Frankenstein* (Michigan, 1984), 81.

[92] Abernethy, (1819), 65.

[93] Ibid., 52, italics mine.

institutional benefits from each successive government.[94] In decrying his 'brother physiologists in France' along with their government, Abernethy was probably unaware of the fact that he himself was pursuing quite the same agenda as his French counterparts. In defending Hunter's theory, Abernethy was explicit that he was defending national honour. Other more practical concerns, however, were inextricably linked with this line of defence – state support, institutional image, and professional respectability were amongst the ultimate motives as well.

Hunter's lifetime work, epitomised by his anatomical collections, was a statement of the incredible feat of an individual, and of the lamentable absence of state support in such an enterprise. Apart from hours of personal labour, the 10,500 anatomical specimens had cost Hunter some £10,000, not to mention the lease of the land and the construction of a building to house his collections. Not surprisingly, when Hunter died in 1793, there was not enough left in the estate to support his family without selling his collections. Hunter provided that the museum was to be first offered to the British nation on reasonable terms, and if the British state refused, then to some foreign state, or in one lot by auction. When the collections were offered to Parliament for purchase, Mr Pitt, then the Prime Minister, was reputed to have said, 'What! buy preparations; I have not money to buy gunpowder'.[95] Parliament eventually took an interest in hearing evidence that the collection was worth much more than the £15,000 offer price, and the sum was eventually voted by Parliament in June 1799.

The procurement of Hunter's anatomical collections represented the first major step in securing the government's support for the science Hunter came to represent. By trade, however, Hunter was a surgeon; and surgeons in 1800 enjoyed neither the institutional standing nor the professional respectability of the physicians. The disparity in respectability between physic and surgery was evidenced by the fact that a physician 'never demeaned himself by attempting, or wishing, to practise surgery, though legally he possessed the right to do so'.[96] The response towards Hunter's collections from the elite scientific community spoke of their disdain towards Hunter's trade. The President of the Royal Society judged that Hunter's

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[94] Charles Gillispie, *Science and Polity in France at the end of the Old Regime* (Princeton, 1980), 560.

[95] Lawrence, *Hunterian Oration* (London, 1846), 10.

[96] Zachary Cope, *The History of the Royal College of Surgeons of England* (London, 1959), 35.

museum was not 'an object of importance to the general study of natural history',[97] and the Royal College of Physicians refused the gift of the Hunterian collections when first offered by Parliament. On their refusal, the collection was then offered to the Corporation of Surgeons. It was no coincidence that the turn of fortune for the surgical community happened with the conferment of the Hunterian museum.

Parliament had no wish to finance the maintenance of the museum after laying out the capital in procurement. It was probably a relief to the government after the refusal of the Royal College of Physicians to find a keeper in the Corporation of Surgeons. James Palmer, Hunter's first biographer, remarked that during this period, the company's funds were 'in an extremely low state; nor were the fame and public reputation of the body in a much more flourishing condition'. Nonetheless, the Council still cast the unanimous vote on 23 December 1799, to accept the Museum on the terms proposed by the Government.[98] As a means to raise the finances for the upkeep of the Collection, the Corporation of Surgeons applied for a new charter from the Crown, which would entitle them to be a Royal College, with permission to examine for diplomas. One could argue that the conferment of the museum was the *cause* for the granting of the Royal Charter on 22 March, 1800.

Speaking of the increase of public reputation, and consequent wealth, Palmer remarked that this 'must no doubt mainly be attributed to the celebrity which necessarily accrued to the College from possessing a new charter, and from being appointed the public guardians of the Hunterian Collection'.[99] It would be no exaggeration to suggest that the Royal Charter was granted in consequence of the guardianship of the Hunterian museum. In this respect, Lawrence echoed Palmer's assessment. Speaking of the Hunterian Museum, Lawrence publicly commented:

> the magnificent and invaluable collection [of Hunter] ... finally rescued surgery from the state ... of a mechanical and subordinate department of the healing art, and have elevated it to its proper rank of an independent science.[100]

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[97] 'John Hunter', *Dictionary of National Biography*, 28 (1892): 287.

[98] James Palmer, *The Life of John Hunter*, *op. cit.*, I:142.

[99] Ibid., I:143. In the first two years since 1800, only about 300 diplomas were granted; but the number increased to 770 in the two years to August 1833. The average receipts to the College from the granting of the diplomas were no less than £11,116 per annum, and the costs for maintaining and augmenting the Collection, up to August 1833, were upwards of £36,000.

[100] Lawrence, (1816), 7.

Lawrence was referring to the emerging respectability of the surgeons as a class of professionals on a par with the gentlemen-physicians. In view of these comments, he was perfectly aware of the social agenda for the surgical community to safeguard the Hunterian legacies, in the form of his museum, and his intellectual property, which had conferred this elevation in status upon the hitherto 'barber-surgeons' of the manual order.

At the turn of the nineteenth century, English society was a 'finely graded hierarchy' in which 'the crucial divide in this scale was between the "gentleman" and the "commoner"'.[101] The former did no manual work, while the latter worked with their hands. The physicians, clergy and lawyers belonged to the gentle rank along with the landed class. Physic required an education which cultivated the mind; their governing institution had been granted a Royal Charter since 1663.[102] The physicians were normally graduates, and typically recruited from amongst the second sons of the gentry or the sons of clergy. An exclusive class of professionals, the physicians virtually had a monopoly in providing medical care for the rich.[103] By contrast, surgery had been a trade; and the 'barber-surgeons' were commoners, manual workers of the artisan class; entry into the trade required only training for manual skills through apprenticeship, not an education of the mind; the governing institution was 'The Company of Surgeons of London', not a 'Royal College'. When Abernethy gave the Hunterian Oration in London in 1819, he asserted that the 'co-partnership between surgery and shaving [had] been but newly dissolved in this country.'[104] The origin of barber-surgery stemmed from medieval times, when the priests were the principal physicians. The priests employed the barbers who shaved their heads according to the uniform of their order, and to also shave the heads of their patients. The priest-physicians taught the barbers to bleed and perform little operations with their edged tools. The image of surgery as a manual art persisted for

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[101] L.S. Jacyna, 'Images of John Hunter in the Nineteenth Century', *History of Science*, 21 (1983): 85-108, 95-6.

[102] Harold Cook, *The Decline of the Old Medical Regime in Stuart London* (Cornell, 1986), 137. The royal association for the College of Physicians came with the new charter written on 23 January 1633, which passed the Privy Seal in March, styling the College as 'King's College of Physicians in the City of London'.

[103] In 1800, the number of physicians recognised by the Royal College in London was very small, just a few hundred in a population of about eight and a quarter million. The fees they could charge were high – fifty guineas for a visit to the country; successful practitioners could amass large fortunes. See Noel Parry and Jose Parry, *The Rise of the Medical Profession – A Study in Collective Social Mobility* (London, 1976), 104-130.

[104] Abernethy, (1819), 19-20.

three centuries, and perhaps in an attempt to separate the two trades, the Company of Barber-Surgeons in London renamed itself the Corporation of Surgeons in London in 1745. But it was the Royal Charter in 1800 granted by King George III that finally conferred the much-coveted status of 'Royal College' to 'The Corporation of Surgeons'. In Abernethy's mind, John Hunter had done more than any other man in elevating surgery to a profession, and in turn, the social status of the surgeons.[105]

Secondly, Abernethy credited Hunter's anatomical studies for laying the foundations of comparative anatomy and physiology in Britain. Hunter's postulations, embodied in his literary remains, were respected by all, and revered by some like Abernethy. To defend Hunter's ideas was no less than defending the new respectability of surgery as a scientific study, and the means with which surgery could cast off the stigma of its manual association. On the one hand, the 'vital principle' as the theory of life ascribed to Hunter formed part of his legacies for the community of surgeons; and to safeguard the Hunterian legacies was a remit motivated by both professional interest and indebtedness to Hunter. On the other hand, the budding respectability that the surgical profession was enjoying in the post-Napoleonic era could have been easily tarnished by any speck of support for the French school. The victory of Waterloo did not remove the deep-seated distrust of the French; this distrust permeated all aspects of life, from philosophy to literature, from manners to amusement. In 1815, a *British Critic* reviewer of the two-volume work by Hookman, entitled *Paris Chit-Chat, or a view of the Society, Manners, Customs, Literature and Amusements of the Parisians*, fully approved of the tone of English superiority adopted by Hookman over the 'corrupt flippancy of the French'. The reviewer drew attention to the 'hideous change' in the national character of France in the space of twenty-five years of war, and concluded that 'Napoleon was adored [by the French] not so much as he flattered their vanity, but as he satisfied their rapacity'. The chief effect related of the hideous change in the French character on Britain was:

> ... that it has preserved the purity of our own; that we return to our native shores with the dignified simplicity of our native character unencumbered with the frippery and frivolity of ancient days.[106]

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[105] See Geoffrey Holmes, *Augustan England: Professions, State and Society, 1680-1730* (London, 1982), for other factors that contributed to the professionalization of surgery.

[106] *British Critic*, 3 (N.S. 1815): 517-526, 525.

Echoing the tone of the *British Critic* reviewer, Abernethy stressed the English as the bastion of good sense against any French influence. France was described as 'a nation where the writings both of its philosophers and wits have greatly contributed to demoralize the people', and the studies of the French physiologists and anatomists as showing 'pernicious tendency'.[107] The respectability of the surgical profession depended upon the collective action of all its members in maintaining the trust of the public as 'sober-minded, moral and benevolent'; promoting French physiological ideas would have been antithetical to this end.

Finally, there was a moral dimension to the Lawrence-Abernethy debate that went beyond the scientific merits of the respective theories of life being defended. Lawrence objected vehemently to the charge of being a member of a party of 'modern sceptics, co-operating in the diffusion of noxious opinions' with a 'terrible band of French physiologists, for the purpose of demoralizing mankind'.[108] Lawrence maintained that 'to fair argument and free discussion, [he would] never object, even if they should completely destroy [his] own opinions.' But in Abernethy's charges against him, Lawrence considered that argument had been abandoned, and 'its place supplied by an enquiry into motives, designs, and tendencies', and the case was altered.[109] To Lawrence, Abernethy had conjoined the debate of a scientific theory with morality. However, the case of linking the study and education of science with morality was advanced not only by Abernethy, but by Lawrence as well. In his 1816 lectures, Lawrence was emphatic in assigning a moral agenda to the study of science:

> The contemplation of nature, however, is not recommended solely by its reference to intellectual objects; it exerts a beneficial and important influence on the moral dispositions. ... Its innocent pleasures are well calculated to detach us from the frivolous and destructive pursuits of dissipation or debauchery.[110]

Regarding the education of his audience, Lawrence expressed his gratitude to Abernethy and his predecessor, 'on public grounds for the pains they have taken to improve surgical education', and consequently 'the respectability of surgeons'.[111] Given the political context of 1816, and the significance of the Hunterian legacies to

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[107] Abernethy, (1817), 52.

[108] Lawrence, (1819), 4.

[109] Ibid., 3.

[110] Lawrence, (1816), 112.

[111] Ibid., 6.

the institutional standing of the Royal College of Surgeons, it should have come as no surprise to Lawrence that his 1816 and 1819 lectures should have incited 'the severest reprobation from every member of [his] profession'. The moral respectability to be conferred upon his own profession through upholding the Hunterian legacies would appear to be a sentiment that Lawrence eventually came to share in his later career. In 1846, Lawrence delivered the Hunterian Oration with the following pronouncement:

> Surgery ... and every part of medical science has felt the vivifying influence of the physiological principles emanating from the bold and inventive genius of Hunter.[112]

It was a pronouncement that could have come from Abernethy. In fact, Lawrence and Abernethy had equally stressed the role of surgical education as a vehicle to build up the moral character of the young entering the profession; and that the respectability of the profession as a whole depended on the moral respectability of its individual members. In the words of Abernethy:

> The education and course of life of medical men tend to make them sober-minded, moral, and benevolent; and their professional avocations equally require, that they should possess such characters and dispositions. Whoever therefore inculcates opinions tending to subvert morality, benevolence, and social interests of mankind, deserves the severest reprobation from every member of our profession, because his conduct must bring it into distrust with the public.[113]

The institutional context in which Lawrence's lectures were delivered accentuated their implications for the moral education of their immediate audience. It was for this reason that Lawrence's lectures received the severest reprobation from every member of his profession.

V

In the first instance, the Lawrence-Abernethy debate appeared to be precipitated by two opposing theories of life. Lawrence's theory of life based on organization placed him within the tradition of conceiving life as immanent in matter. Abernethy's espousal of a theory of life based on the Hunterian vital principle

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[112] Lawrence, (1846), 42.

[113] Ibid., 53.

superadded to the bodily matter suggested that he viewed life as transcendent of matter. On closer examination, it can be seen that there was an element of vitalism in Lawrence's materialism, and there was an element of materialism in Abernethy's vitalism.

Lawrence's theory of life as dependent on organization had, nonetheless, placed limitations on organization as the ultimate 'cause' of life. To Lawrence, organization alone was not sufficient for life to emerge; organization was a pre-condition for vital properties to emerge, but it was not itself the cause of vital properties. Though Lawrence asserted the primacy of organization in causing life, the primacy was one of a pre-condition, not the cause itself. Hunter used the notion of 'superaddition' in recognition that the principle of life could not have arisen from the peculiar modification of matter, because the same modification existed before and just after death. Life therefore appeared to Hunter to be something superadded to organization. Hunter resorted to the concept of superaddition because he concluded, like Lawrence did, that organization itself was not sufficient to cause life. In this respect, there was some common ground between Lawrence's view of life as organization and Hunter's conception of life involving a superadded principle.

Furthermore, there was a material element in Hunter's conception of the vital principle that rendered the Hunterian theory of life not as transcendent of matter as it appeared to be. According to Lawrence's interpretation, 'Mr Hunter has a good substantial sort of living principle; he seems to have had no taste for immaterial agents, or for subtile matters. His materia vitae is something tangible; he describes it as a substance like that of the brain, diffused all over the body, and entering into the composition of very part'.[114] Abernethy went further by suggesting that the subtile substance was an electric fluid. The material element in the Abernethy's interpretation of the vital principle meant that the external agency which superadded life to matter was not a transcendent agent, but a *material* agent. On closer examination therefore, neither Hunter's 'materia vitae', nor Abernethy's subtile fluid, was totally free from matter. The 'materia vitae' might be invisible but it was still a substance; the electric fluid might be subtile like the force of gravity, but it still involved the medium of matter.

Abernethy's *Reflections on Gall and Spurzheim's System of Physiognomy*

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[114] Lawrence, (1819), 73.

and Phrenology (1821) would support the interpretation that there was much more materialism in Abernethy's appreciation of the nature of life and the mind than has been hitherto noted in other studies on the Abernethy-Lawrence debate. Abernethy admitted that he admired the simple proposition from phrenology that 'man and animals resemble one another, in each possessing, in various degrees, instinctive and urgent propensities', but that Gall and Spurzheim had also shown, that man differed from animals in possessing 'superior rational faculties and sentiments'. Furthermore, Abernethy indicated that he saw no objection to the classification (arrangement) of these superior faculties into comparison, analysis or causation, or to the localisation of these faculties to particular 'organs' of the brain:

> this arrangement refers to all the intellectual powers cognizable in the actions of the human mind: powers which seem exclusively to belong to man. I am even pleased with the station which the organs supposed to be productive of these powers are said to occupy.[115]

The occasion for Abernethy's reflections on phrenology was to address the court of assistants of the Royal College of Surgeons in June 1821. Was Abernethy not therefore espousing his support for a materialistic theory of the mind in an institutional context – just as Lawrence had done in 1816 and 1818? If there were parallels, the outcome was very different. Abernethy's *Reflections* did not lead to any *Remarks* from the religious establishment, or engendered any debates within the scientific community. The contrasting reception of Lawrence's *Lectures* and Abernethy's *Reflections* by the Royal College of Surgeons reinforces the conclusion that factors other than the absolute objection to materialism were at work in shaping the responses of the scientific community.

Despite initial appearances, therefore, it was not materialism that was the ultimate issue in the debate on the two theories of life, but differing concerns with the related issues of immortality and morality. For Abernethy, Lawrence's approach seemed to provide hostages to atheists, and was therefore irresponsible. In a world where morality was still dependent upon religious belief, Lawrence's views could be seen to undermine morality. Abernethy did not so much respond by developing a new immaterialist science of life, but by developing a rhetorical presentation of his theory of life which seemed to deny a foothold for atheists. The importance of what might be regarded as image, rather than substance, in the debate can be seen in the

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[115] John Abernethy, *Reflections on Gall and Spurzheim's Systems of Physiognomy and Phrenology* (London, 1821), 33.

concern for the professional public image of surgeons, and the institutional respectability of the Royal College of Surgeons. Abernethy was motivated to act as an advocate of Hunter because he believed Hunter could serve as a respectable role model, and his medical theories could be made to serve the traditional alliance between religion and morality. Lawrence, by contrast, was more concerned to separate science and religion. Seeing vital properties as physical, yet inexplicable, entities, analogous to Newtonian gravity, Lawrence used notions of scientific methodology to suggest that it was impossible to go further, as a scientist:

> The most we can accomplish is, to make gradual conquests from the territories of ignorance and doubt; and to leave under their dominion those objects only which our reason has not reached, or is not able to reach.[116]

The wish to separate science from theology, which was being voiced by Lawrence during the controversy, was largely ignored by his contemporaries. The separatist stance, however, was to appeal to more practitioners of science, and even leading voices within the established church, as the nineteenth century progressed.

[116] Lawrence, (1819), 71.

Materialism and Atheism go hand in hand

> Mr Lawrence has plainly told his hearers that medullary matter is capable of sensation and thought – that there is no independent living principle superadded to the structure of animal bodies – that life is the result of organization. ... Materialism and Atheism go hand in hand; ... For when we have argued ourselves out of the existence of our soul, which is a spirit, by the very same process, we argue ourselves out of the existence of the Almighty, which is a spirit also.
>
> The Reverend Thomas Rennell, 1819.[1]

> That life then, or the assemblage of all the functions, is immediately dependent on organization, appears to me, physiologically speaking, as clear as that the presence of the sun above the horizon causes the light of day; ... I say, physiologically speaking; and beg you to attend particularly to this qualification: because the theological doctrine of the soul, and its separate existence, has nothing to do with this physiological question, but rests on a species of proof altogether different.
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> William Lawrence, 1819[2]

The formal opening of the Lawrence episode can be dated 21 and 25 March 1816, when Lawrence delivered the two *Introductory Lectures* that sparked off the debate on life. By coincidence, a symbolic closure to the episode happened on the sixth anniversary of these lectures, when the case 'Lawrence versus Smith' was heard at the Chancery Court, on 21, 25 and 26 March 1822.[3] The case concerned the copyright of the series of lectures delivered by Lawrence in 1818, and first published in February 1819 as *Lectures on Physiology, Zoology and the Natural History of Man*. As related in the previous chapter, the publication of these lectures seemed to have precipitated the approbation of the medical establishment. By April 1819, Lawrence was suspended from his appointment as surgeon to Bridewell and Bethlem Hospitals, and was threatened with a similar prospect regarding his position as assistant-surgeon at St. Bartholomew's. Bowing to the pressure, Lawrence pledged,

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[1] Thomas Rennell, *Remarks on Scepticism* (London, 1819), 64.

[2] William Lawrence, *Lectures on Physiology* (1819, London, 3rd edn., 1823), 6-7.

[3] *The English Reports* (Edinburgh, 1904), 37: 928-9.

in a letter to a governor of the hospitals, 'to suppress and prevent the general circulation of both sets of lectures, and to refrain from ever lecturing again on these subjects'.[4] The pledge to suppress the circulation of the lectures procured the desired effect, and Lawrence was reinstated by Bridewell and Bethlem in June. The withdrawal of the 1819 lectures from public sale, however, directly led to the flourishing of a black market. *The Monthly Magazine* reported a quadrupling in the price for the 1819 lectures before the end of 1819: 'Such [was] the eagerness to possess it, that its price had risen from one to four guineas'.[5]

The black market circulation of Lawrence's lectures eventually led to the Chancery lawsuit of 1822. Early that year, a bookseller James Smith in the Strand published a pirated edition of Lawrence's 1819 lectures. It is important to note that the suppression of Lawrence's lectures was not enforcement by the law but the author's decision; hence, the pirated edition was not illicit because of the suppression, but as an infringement of copyright. The case was brought to the court because Lawrence sought an injunction to restrain the sale of the pirated edition to protect his of copyright.[6] Smith's Counsel, Sir Charles Wetherell,[7] built upon the latest precedent set by Lord Byron's case of February 1822, in which Byron lost his copyright over a pirated edition of his poem *Cain*. The verdict, with reference to two antiquated Acts,[8] was that no property could be vested with the author where the manuscripts were *blasphemous, seditious,* or *immoral*. In a similar vein, Wetherwell argued that Lawrence's 1819 lectures were 'hostile to natural and revealed religion, and impugned the doctrines of the immateriality and immortality of the soul',

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[4] Quoted in Bynum, *Time's Noblest Offspring* (Univ. of Cambridge D. Phil., 1974), 149.

[5] *The Monthly Magazine*, 1819 (Pt 1), 47:451.

[6] Peter Mudford, 'Lawrence's *Natural History of Man* (1819)', *Journal of History of Ideas,* 22 (1968): 430-436, for an account of misinterpretation in this respect in some earlier studies.

[7] Wetherell, Sir Charles (1770-1846), *Dictionary of National Biography* 60 (1892): 385; described as a 'pedantic and bigoted' Tory who 'regularly and vehemently defended Lord Eldon and the existing practice of the Courts of Chancery against all criticism or proposals for reform. ...staunch to the extreme protestant cause, voted against the Roman catholic emancipation bill.'

[8] 1637 (11 July) the Star Chamber of Charles I passed an act requiring all printers and publishers to be licensed, stipulating two conditions: (1) the printers must not produce any 'seditious, schismatical, offensive books or pamphlets'; (2) all publications must bear the name and address of the publisher and also the name of the author as a necessary identification for punishment. In 1709, Parliament passed 'An Act for the Encouragement of Learning by Vesting the Property of Printed Books in the Authors'. The implication of the two Acts considered together, was that there was no property in manuscript which were blasphemous, seditious, or immoral. (Reference from Goodfield-Toulmin, 'Some Aspects of English Physiology', *Journal of History of Biology,* 2 (1969): 283-320, 307.)

decrying them as the 'poison disseminating' from Lawrence's pen.[9] In communicating his judgement, Lord Eldon conceded to Wetherell's argument and judged that:

> Looking at the general tenour of the work, and at many particular parts of it, recollecting that the immortality of the soul is one of the doctrines of the Scriptures; considering that the law does not give protection to those who contradict the Scriptures, ...I cannot continue the injunction.[10]

Eldon was fully aware of the paradox of his decision in stating that 'if the injunction be refused, it [had] the effect of increasing the number of copies'. 'The answer to that is', continued Eldon, 'that I have nothing to do with it as a crime'. He contented himself with addressing the case concerning *only* 'the civil right of property'. In deciding it was more imperative to condemn the adjudged blasphemy than to suppress its circulation, Lord Eldon's verdict unwittingly overturned the containment strategy enforced by the medical establishment on Lawrence in 1819.[11] Deprived of his copyright to restrain the *public* circulation of the pirated editions of his *Lectures* by the Chancery Court, Lawrence was to pledge to suppress the *private* circulation of his works within days of Eldon's decision.

On 2 April 1822, Bridewell and Bethlem Hospitals suspended Lawrence for the second time when it transpired that Lawrence had been distributing his 1819 *Lectures* privately since 1819. Lawrence defended his action on the grounds that some 400 copies had been 'granted only as a matter of favour in individual instances, to professional men, *particularly foreigners*, or to scientific and literary characters'.[12] In terms categorical and definite, Lawrence made another retraction by letter to the Governors of Bridewell and Bethlem:

> Further experience and reflection have only tended to convince me more strongly that the publication of certain passages in these writings was *highly improper*; to increase my *regret* at having sent them forth to the world; to make me satisfied with the measure of withdrawing

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[9] *The English Reports,* 37: 929.

[10] Ibid., 929.

[11] 'Lord Eldon (John Scott), (1751-1838)', *Dictionary of National Biography,* 51(1892):55. His biographer described Eldon's 'gravest error was the extent to which he pushed the principle that the court will not protect by injunction works of an immoral, seditious, or irreligious tendency'; in his decision in cases regarding Byron, Lawrence, Southey, and Wolcot.

[12] Lawrence's letter to Sir Richard Glyn, quoted in *Gentleman's Magazine*, 83 (1822): 441-443; italics Lawrence's. The foreigners would include the copy in the Royal Society of Science in Stockholm, and one to the New York Academy of Medicine. This edition also contains the two lectures delivered in 1816. (See Goodfield-Toulmin, *op. cit.*, footnote 41, 308.)

> them from public circulation; and consequently firmly resolved, not only never to reprint them, but also *never to publish any thing more on similar subjects.*

Having reiterated his commitment to suppress his own works, Lawrence alluded to the 'trouble and expense of a chancery suit' that he had incurred in order to uphold his previous pledge (in 1819) to suppress his *Lectures* from public circulation. He concluded the letter by addressing 'the charge of *irreligion* hinted at in the Court of Chancery', and instead of refuting the charge, Lawrence adopted the tactic of confirming the orthodoxy of his beliefs:

> I am fully impressed with the importance of religion and morality to the welfare of mankind – that I am most sensible of the distinguishing excellence of that pure religion which is unfolded in the New Testament; and most earnestly desirous to see its pure spirit universally diffused and acted on.[13]

The retraction had the desired effect for the second time, and Lawrence was reinstated on 8 May 1822. The sequence of events had to be understood in the context that the hospitals of London at this time were, in the main, very wealthy, which also meant very powerful. The Governors of these hospitals were drawn from the class of noblemen and gentlemen of 'the more wealthy sections of the mercantile and trading classes',[14] who were the social elite and politically influential. Lawrence's second retraction appeared to have been driven by political expediency, in contrast with the defiant spirit apparent in his address in 1817, made soon after the mock-trial by Abernethy of his *Introductory Lectures*:

> Without this freedom of enquiry and speech, the duty of your professors would be irksome and humiliating: they would be *dishonoured in their own eyes*, and in the estimation of the public. These privileges, Gentlemen! shall never be surrendered by me: I will not be set down nor cried down by any person, in any place, or under any pretext.[15]

Between a principle and a future within the establishment, Lawrence had chosen the latter. On a wider front, the verdict of the lawsuit eloquently testified to the force of concern for Lawrence's generation in their appreciation of scientific ideas for their *religious* and *social* implications. Eldon's decision was a symbolic pronouncement from the ruling establishment on Lawrence's lectures. In judging the lectures as

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[13] The letter to the Governors of Bridewell and Bethlem was quoted in part in a letter of 16 April 1822 to Sir Richard carr Glyn, President of the two hospitals. See *Gentleman's Magazine*, 83 (1822):443.

[14] George Macilwain, *Memoirs of John Abernethy* (London, 1856), 285.

[15] Lawrence, (1819), 3.

contradictory to the Scriptures, Eldon's decision reinforced the main tenets of the campaign against Lawrence's lectures since 1817. Primarily with his *Remarks on Scepticism*, the Reverend Thomas Rennell emerged as the leading voice in this campaign. 'Materialism and Atheism go hand in hand' was the charge that encapsulated Rennell's arguments against Lawrence's lectures, and was echoed in the pamphlet literature, through which the wider public joined in the debate. By examining the pamphlet literature and a close study of the *Remarks*, this chapter attempts to tease out the religious and social implications of Lawrence's lectures for his contemporaries.

II

Son of a cleric, a Hackney protégé, educated in Cambridge, and ordained into the Anglican Church, Thomas Rennell (1787-1824) was groomed to become a quintessential High-Church, Tory cleric.[16] The Rennells belonged to the Hackney Phalanx, a political designation for the enclave of families based in a village north-east of London, who were renowned for their staunch support of the constitutional alliance of the Church and State.[17] The Phalanx sought to revive the social authority of the established church, and influenced the appointments to bishoprics, archdeaconries, and prebendaries through the influence they had with Lord Liverpool, the Tory prime minister form 1812 to 1827, and on Charles Manners-Sutton, archbishop of Canterbury form 1805 to 1828. At the age of twenty-four, Rennell was already an editor and a frequent contributor to *British Critic*, the literary

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[16] The Tories were in government in 1815, and they held their majority until 1830. The party had the support of most of the gentry and the landed families, the universities, the services, the unreformed municipal corporations in towns. They wanted to keep their authority and privileges as supported by the *status quo*. By 1822, when anti-Jacobinism began to ebb, Toryism also started to change into Conservatism, and the process of parliamentary reform gradually set in.

[17] The two main groupings within the United Church of England and Ireland were the High Church party and the Evangelical party. In the early nineteenth century, the High Church party was dominated by a group of influential London-based clerics and lay members called the 'Hackney Phalanx', while the Evangelical party was dominated by a similar grouping designated as the 'Clapham Sect'. The High Church party placed emphasis on the visible Church – its sacraments, traditions, doctrines, and ceremonies; they viewed the Church of England as a branch of the holy catholic and apostolic Church; they rejected Calvinism because it encouraged the spiritual pride of the 'elect'; they believed government existed with divine sanction, and the social hierarchy was also ordained. The Evangelical party embraced causes like in social action, like the abolition of the slave trade, and the spread of the gospel through missionary activities in the expanding British Empire. See discussions in Stewart J. Brown, *The National Churches of England, Ireland, and Scotland, 1801-1846* (Oxford, 2001), 51-62; J.C.D. Clark, *English Society, 1668-1832* (Cambridge, 1985), 121-140.

vehicle for the Tory High-Churchmen. In the year 1816, when Lawrence gave his controversial lectures, Rennell was appointed the vicar of Kensington by the Bishop of Lincoln, and elected to be the fourth Christian Advocate of Cambridge University. It was in his office as the Christian Advocate that Rennell became involved in the Lawrence debate. The five years Rennell devoted to the campaign against Lawrence's lectures represented the single, most important theme amongst all his endeavours. The *Remarks on Scepticism* represented the pinnacle of Rennell's achievement, and it was primarily for this work that Rennell was elected a Fellow to the Royal Society in London in 1822.[18] Not only did the work gain the endorsement of the scientific and ecclesiastical establishments of his time, it was also the only systematic attempt to offer a scientific critique of Lawrence's ideas. Furthermore, compared with Abernethy's eclectic responses in which the scientific content was thin, *Remarks* had a higher degree of engagement with the science, albeit the motivation for such an engagement was to tease out the theological implications.

As early as 1817, Rennell set the tone for the clerical response with an article published in *British Critic*.[19] The gist of Rennell's criticism was that Lawrence's lectures showed tenets of scientific materialism, and 'Materialism and Atheism go hand in hand'. Amongst the impressionable young men in Lawrence's immediate audience, Rennell cautioned that scientific materialism would lead to religious scepticism, and in its turn, atheism, which was 'the pander of profligacy', and free thinking, 'another word for not thinking at all'.[20] Under the auspices of his office as the Christian Advocate, Rennell expanded the article into a 150-page pamphlet, published as *Remarks on Scepticism*, in 1819. What motivated Rennell to pen the *Remarks* was what he saw as a need 'to call the attention of the Public to the mischievous tendency of such opinions'. Lawrence's treatises, according to Rennell, struck 'deep at the root of all Religion, both natural and revealed'.[21] Despite Lawrence's qualification that 'the theological doctrine of the soul, and its separate existence, has nothing to do with the physiological question [of what life is]', Rennell judged Lawrence's lectures to be subversive to religion and morality. As the

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[18] Rennell was proposed by his father, Thomas Murdoch, George D'Oyly and Henry Harvey Baker, who were all clergymen. Bynum interprets Rennell's fellowship proposal as forcing the scientific establishment 'into a kind of collective pronouncement on the situation', given that Rennell's only claim to scientific distinction was *Remarks on Scepticism*. Bynum, *op. cit.*, 158.

[19] Rennell, 'Lawrence's Introductory Lectures', *British Critic*, 8 (N.S., 1817): 63-73.

[20] Rennell, (1817), 73.

[21] Rennell, *Remarks* (1819), preface.

Hulsean lecturer for 1821, Rennell gave a series of lectures in Cambridge on the same subject as the *Remarks*.[22] Fulfilling its remit of drawing the public's attention to these 'mischievous opinions', the *Remarks* seemed to engender a pamphlet war in which the wider public joined in the debate. Indeed, between 1817 and 1821, a sustained campaign against Lawrence's views can be traced through Rennell's personal efforts and the pamphlet literature.[23]

The clerical voice of Rennell was joined by the Reverend George D'Oyly, predecessor to Rennell as the Christian Advocate, in a survey in the *Quarterly Review* (1819), of all the major literature in the Lawrence debate. D'Oyly rebuked Lawrence's disclaimer that 'the theological doctrine of the soul and its separate existence has nothing to do with [the] physiological question' of life as organization, and charged Lawrence with placing the 'valuable science [of physiology] into the service of infidelity'.[24] With his 'doctrine of materialism', Lawrence was accused of invalidating 'those other proofs of the immaterial and immortal nature of the soul, which, in reality, [physiology] is calculated to support'. Those other proofs in physiology that supported the immaterial and immortal nature of the soul were to be found in Abernethy's theory of life, as interpreted by D'Oyly:

> ... that life, in general, is *some* principle of activity added by the will of Omnipotence to organized structure – and that, in man, who is endowed with an intelligent faculty in addition to this vital principle possessed by other organized beings, to life and structure an immaterial soul is superadded.[25]

In conclusion, D'Oyly stated that it was imperative for the satisfaction of the public and the credit of the Royal College of Surgeons, that the College should stipulate constraints on Lawrence's future lectures, and that 'all those obnoxious passages which have given such deserved offence' in the published lectures should be

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[22] The Hulsean lectureship and the office of Christian Advocate were both endowed on the University of Cambridge by John Hulse. The lectureship continues to this day, but the office of Christian Advocate lasted only for half a century, and only once were scientific works being singled out as sources of 'new or dangerous error', and that was in 1819 with the publication of the *Remarks*.

[23] Bynum has identified two later pamphlets on Lawrence. *An Essay upon the relation of Cause and Effect* (1824) emphasized the influence of David Hume's philosophical scepticism on Lawrence. From the title of the second pamphlet *Thought not a Function of the Brain* (1827), I infer that it probably was an attempt to refute Lawrence's claim that medullary matter can think. Without giving further reasons, Bynum dismisses 'these pamphlets [as] irrelevant to the mainstream of the debate'. Bynum, *op. cit.*, 148. I have not been able to locate these pamphlets to assess Bynum's judgement.

[24] George D'Oyly, 'Abernethy, Lawrence, &c. on the Theories of Life', *Quarterly Review*, 22 (July 1819), 1-34, 31.

[25] Ibid., 2.

expunged.[26] The Reverend Edward Grinfield went further with his 'instructions'. In a pamphlet published in May 1819 by campaigning for the complete withdrawal from circulation of all Lawrence's lectures.[27] Significantly, these 'instructions' had been anticipated by the establishment, for by June 1819, Lawrence had resigned from his professorship, submitted his (first) retraction, and withdrawn his two series of lectures, published in 1816 and 1819 respectively, from public circulation.

Aside the clerics, reputable periodicals and private pamphleteers were swift to join the debate. For instance, the Tory, High-Church *Anti-Jacobin Review* published a three-part review in 1819, identifying Lawrence's work with the 'atheistical tenets', 'assassination', 'plunder', 'adultery' and 'sodomy' of Jacobinism.[28] The *Eclectic Review* accused Lawrence of 'an attempt to convert physiology into an engine of attack against Christianity'. The reviewer called this 'an attempt of flagitious nature' in common with all the infidel mathematicians, geologists and anatomists, which was to annihilate 'that vast, omnipresent, ever pressing idea of Deity, to bar it out from all the avenues of science'.[29] In its review of Rennell's *Remarks*, the *Edinburgh Monthly Review* praised Rennell's efforts as of 'absolute merit', and the 'moral and religious principles which pervade it', as 'the most pure and most rational'. In contrast, the 'sects of infidels and sceptics', to which Lawrence belonged, were 'men of very inferior faculties to their predecessors'. Lawrence was censored for confounding life with organization, and for arriving at the 'ridiculous conclusion' that 'the brain is of itself capable of thought'. The reviewer continued, that 'if there be any faith which is truly miraculous, surely it must be that which believes in such a doctrine as this -- that the mind is mere matter, and that a man has no other soul than his brain'.[30]

The sagacity of the *Edinburgh Monthly Review* offered a contrast against the sentimental banality of an article in the *British Critic*. Published in 1819, the reviewer found scope in absolving Bichat for his physiological speculations but was resolved to condemn Lawrence's:

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[26] Ibid., 34.

[27] Reference from Bynum, *op. cit.*,148.

[28] *Anti-Jacobin Review*, 56 (1819): 313-23, 408-15, 514-21; a three-part review of Lawrence's lectures as cited in Bynum, *op. cit.*, 147.

[29] 'Lawrence and Pring on Physiology', *Eclectic Review*, 35 (1822): 481-505, 482.

[30] *The Edinburgh Monthly Review*, 3 (1820): 69-88, 69 & 84.

> Melancholy it is indeed to think that Bichat has mixed up with his physiological speculations, ... but it must be considered as an apology for the man, ... that he was only 7 years of age [sic] when the French Revolution broke out. ...With respect however to Mr Lawrence, he ... was extremely wrong and censurable in supposing that because a French professor, in a country and at a time when all principles of every kind were treated with ridicule, might talk atheism to his pupils, and treat the religion of Christianity with contempt, that therefore an English professor may ... take the same liberty.[31]

The apology offered to Bichat might not have been valid had his age been calculated correctly. Born in 1771, Bichat was 17 when the French Revolution broke out. That error aside, the *British Critic* was representative in linking Lawrence's ideas to the dangers of the French Revolution. Other pamphleteers dwelt on the same theme. For instance, Oxonian, a pseudonym for an active member of the Bible Society who might also be in orders, coined the term *Radical Triumvirate* to denote infidels like Lawrence, Thomas Paine, Richard Carlile. Indeed, Oxonian named Lawrence as the most dangerous of the *Radical Triumvirate*, for by asserting that 'the soul is only the brain', Lawrence challenged the doctrine of the immortality of the soul, and in turn, questioned the existence of a future state. To this threat, Oxonian asked the rhetorical question:

> Who does not know that we must attribute the French Revolution, with all its horrible attendants of anarchy, despotism and murder, to the persuasion that there was no future existence?

By imbibing the texts of these radicals, Oxonian warned of the prospect when 'the very footman will become as eloquent as his master in abuse of religion'. With his language edging closely to hysteria, Oxonian continued:

> Tom Paine's open and undisguised blasphemies, ... Carlile's Mock Trial and his Rampant Republican, Don Juan's bold and merry profanities ..., or Lawrence's surgical demonstrations that the soul is only the brain; will lie in the summer house, ready for the gardener to read at leisure, to counteract the lessons of religion which Nature and Nature's God may teach him, and to justify his adroit frauds upon the hot-house, and other immoralities.[32]

Defenders of Lawrence were few; many sympathisers would either keep their silence or not wish to be known by name. For instance, the pro-Lawrence author adopted the pseudonym of 'Do Wylke Edwinford' in his *Review of Rennell.*

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[31] *British Critic,* 12 (N.S. 1819): 95; Bichat was born in 1771, and was 18 years of age in 1789 when the French Revolution broke out.

[32] Oxonian, *Radical Triumvirate* (1820), 7-8; quoted in Bynum, *op. cit.*, 145-6 and 157.

Edwinford criticised Rennell for 'confounding Deism with Atheism', and described the theological opinions of the time as showing 'ample signs of narrowness and bigotry', and that to deny Lawrence the right of free inquiry was to return to the atmosphere of the Inquisition.[33] Thomas Foster, a Catholic who published under the pseudonym 'Philostratus', maintained that the Bible should not be used for scientific knowledge, and reminded his readers of the precedent of Galileo 'imprisoned in a dungeon for truths afterwards confirmed by Newton'.[34] Foster pleaded that 'physiology should be allowed free and unshaded inquiry which need not be feared, since religion did not need the support of science'.[35]

The *Monthly Magazine* was unusual in its unreserved support of Lawrence. With Lawrence's first retraction in 1819, the readers were reminded of the 'ridiculous affair of Galileo and the Church of Rome'. Lawrence's opponents were likened to the zealots, 'who, by *a palpable mistake of the question*, in opposing theological truth to philosophical truth, have rendered any service either to God or religion'.[36] In 1822, the magazine printed Lawrence's letter of second retraction in parallel columns with the 'never-to-be-forgotten adjuration of Galileo'.[37] The *Quarterly Journal of Foreign Medicine and Surgery*, while insisting that they could not defend Lawrence because they differed from him, but would 'scorn to sanction anything which strikes at the liberty of thought and speech'; for 'it is too like Galileo and the Inquisition'.[38]

Repeatedly, Galileo and the Inquisition were cited in this debate to epitomise the obstructionist efforts on the grounds of religion. The common theme that emerged amongst Lawrence's defences was the plea to allow science to conduct free enquiry unhindered by religious considerations. This freedom was to be observed by marking out the boundary between science and religion. As Lawrence maintained, the theological doctrine of the soul and its separate existence was not for the

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[33] Edwinford, 'Review of Rennell', *The Republican* (1819), 67, published by Richard Carlile; quoted in Bynum, *op. cit.*, 145.

[34] Philostratus (Foster of Chelmsford), *Somatopsychocologia, showing that Body, Life and Mind considered as Distinct Essences cannot be deduced from Physiology* (London, 1823), 116; quoted in Goodfield-Toulmin, 'Aspects of English Physiology', *op. cit.*, 317.

[35] Ibid., quoted in Temkin, 'Basic Science, Medicine, and the Romantic Era', *Bulletin of the History of Medicine*, 37 (1963): 97-129, 110.

[36] *The Monthly Magazine*, 47 (1819): 451.

[37] *The Monthly Magazine*, 53 (1822): 542-543.

[38] *The Quarterly Journal of Foreign Medicine and Surgery*, 2 (1819-20): 227-8; quoted in Bynum, *op. cit.*, 56.

physiologists to answer, 'but rests on a species of proof altogether different'.[39] The *Monthly Magazine* seemed to find it possible to keep the religious soul undisturbed by the implications of philosophical (scientific) enquiries:

> ... for the purpose of teaching the doctrine of *a future state* ... is a point of theological faith, which rests on its own evidence. A question however of pure philosophy has arisen, whether the mental powers and principle of life in men and animals are analogous; or whether reasoning is a result of material secretion, or is an energy distinct from matter. On either of these hypotheses the main theological dogma remains undisturbed.[40]

This kind of demarcation, however, went against the long tradition of natural theology in Britain, founded on the glittering achievements of natural philosophers such as Newton, Boyle, and Bacon. From nature to nature's God, the study of the book of nature was to reveal divine wisdom and power, as eloquently (if not more unequivocally) as the Bible. The tradition of natural theology was given a new impetus and synthesis with William Paley's celebrated work, *Natural Theology*. First published in 1802, it was in its sixteenth edition by the time Lawrence gave his 1816 lectures, testifying to the popularity of Paley's arguments. Its pervasive influence on the collective thinking of the Anglican priesthood was also borne out by the fact that *Natural Theology* soon became a set text for those training for ordination. One could safely presume that Rennell and his generation of clerics would have deeply imbibed Paley's *Natural Theology*. At the turn of the nineteenth century, Paley named human anatomy as his favourite for 'the proof of an intelligent creator' amongst all the disciplines in the study of nature.[41] Indeed, Lawrence himself reiterated Paley's view in enumerating the importance of comparative anatomy in his 1816 lectures:

> ... to the natural theologian, who discovers in the modifications of structures, according to situation and circumstances, and its constant relation to the wants, habits, and powers of animals, the strongest evidence of final purposes, and therefore the strongest proof of an intelligent first cause.[42]

While Lawrence might not whole-heartedly endorse the use of anatomy as proof of an intelligent creator, he was nonetheless fully aware of the importance of

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[39] Lawrence, (1819), 6.

[40] *The Monthly Magazine*, 47 (1819): 451.

[41] William Paley, *Natural Theology; or Evidences of the Existence and Attributes of the Deity – collected from the appearance of Nature*, (1802, London, 1816), 458.

[42] Lawrence, (1816), 29.

comparative anatomy to natural theology. Not surprisingly, Lawrence's plea for the boundary of knowledge was not to be readily heeded by his contemporaries.

Rennell's *Remarks* has to be appreciated in the context of the prevalent culture of natural theology. In penning the *Remarks* 'to reconcile the views of the philosopher and the Christian',[43] Rennell was acting within a well-established tradition as an amateur 'clergyman-scientist'. Not only was the boundary not observed in the early nineteenth century, many scientists in fact 'considered the moral and metaphysical imperatives of natural theology as a proper and integral part of their vocation and not as an intrusion of extraneous categories imposed by outside institutions'.[44] To describe Rennell as 'invading a physiological issue with theological arguments' would be anachronistic.[45] In playing the role of the clergyman-scientist, Rennell was acting within a well-established tradition in British science. As Frank Turner points out, 'ever since the seventeenth century the parson-naturalist and the academic clergyman-scientist had played a major and by no means inglorious role in British science, as names of John Ray, Joseph Priestley, John Stevens Henslow, Adam Sedgwick, and William Whewell attest'. For the clergyman-scientists, 'natural science and natural theology, the clerical and the scientific callings, were not simply compatible, but complementary'.[46] Amongst the critics of Lawrence, it was Rennell (not Abernethy) who actually seriously engaged with Lawrence's science in his critique. While the comments and rhetoric of the pamphlet war offered us a glimpse of the emotions evoked during the controversy, it was in the *Remarks* that we may find some more concrete answers as to why Lawrence's lectures were adjudged to be blasphemous by his contemporaries.

III

The full title of the pamphlet was *Remarks on Scepticism, especially as it is connected with the subjects of Organization and Life, being an answer to the Views of M. Bichat, Sir T.C. Morgan, and Mr. Lawrence, upon those points.* Both

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[43] Rennell, (1819), preface to *Remarks*.

[44] Frank Turner, 'The Victorian Conflict between Science and Religion: A Professional Dimension', in Gerald Parsons (ed.), *Religion in Victorian Britain* (Manchester, 1988), 176.

[45] Quoted in Goodfield-Toulmin, *op. cit.*, 316.

[46] Frank Turner, *Contesting Cultural Authority* (Cambridge, 1993), 183-4.

Morgan[47] and Lawrence were influenced by Bichat, but it was Lawrence's 1816 *Introductory Lectures* which received the most extensive treatment by Rennell.[48] The institutional authority bestowed on Lawrence's lectures rendered them all the more 'dangerous' because of the profile of Lawrence's immediate audience, described by Rennell as:

> By far the larger part of those who look up to Mr Lawrence for instruction, as far as intellect is concerned, have received no education at all. At the age of fourteen all general instruction has in their case been concluded, and their views have been unceasingly directed to the study and practice of their future profession.[49]

The motive ascribed by Rennell to Lawrence for the adoption of the French school of thought was perhaps more generous and less censorious than many others: 'From an admiration perhaps of the professional attainments of the French physiologists, Mr. Lawrence has incautiously admitted some of their most dangerous tenets'.[50] These dangerous tenets as perceived by Rennell were: 'that medullary matter is capable of sensation and thought – that there is no independent living principle superadded to the structure of animal bodies – that life is the result of organization'.[51] These were scientific ideas pertaining to the nature of the mind and the cause of life, which Rennell judged to be impinging on the theological doctrines concerning (1) the moral distinctiveness of man and the existence of free will, (2) the immorality of the soul upon which the Christian message of salvation was founded; and (3) the existence of a transcendent God as the cause of life. To summarise, if the Lawrence-Abernethy debate centred upon the Life-Matter problem, the Lawrence-Rennell debate

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[47] Sir Thomas Charles Morgan (1783-1843), a Cambridge M.D. and a Fellow of the Royal College of Physicians. Like Lawrence, he was a Francophile and was actively engaged in liberal political issues. Influenced by the monistic philosophy of the *ideologue* school, he espoused one central idea of *idéologue* in particular, that 'the activity of the most elemental organic processes foreshadowed conscious choice and reason'. (Jacyna, 'Immanence and Transcendence', *Isis*, 74 (1983):311-329, 314). Morgan was a true contemporary of Lawrence; (born in the same year) and in 1819, Morgan published *Sketches on the Philosophy of Life*. To all intents and purposes, Morgan and Lawrence could easily have shared the same fate with regard to their publications and careers, but for two factors. First, the institutional context of Lawrence's lectures gave rise to the drama and exerted more urgency to their condemnation. Morgan's publication was in the name of a private individual and was not so much caught up in the polity of the scientific establishment. But then, Lawrence's retractions saved his career; Morgan maintained his views and in the end, had to close down his medical practice.

[48] Lawrence's lectures in 1817 and 1818 were published in 1819, and that was why in Rennell's *Remarks* of 1819, only Lawerence's 1816 lectures were referred to.

[49] Rennell, *British Critic*, 8 (1817), 64.

[50] Rennell, *Remarks*, 64-5.

[51] Rennell, *Remarks*, 64; author's italics.

originated in the Mind-Brain duality, which in itself was an acute manifestation of the Life-Matter problem.

The conventional outlook of the time was that the human mind was bestowed by God on man alone. It was often thought of as the *only* part in man that was of divine origin, and as such, the mind had to partake of the immaterial nature of God, who was conceived of as an immaterial, spiritual entity. The immaterial nature of the mind guaranteed that it was capable of an *independent* and *separate* existence from the bodily frame. The *independence* carried with it the connotation that the mind was above the material body, and could govern the body in guiding and guarding its impulses; the independence of the mind was therefore the basis for morality. The *separate* existence of the mind meant that it was not bound by the body and was capable of continuing its existence in a separate state after the death of the body, thereby attaining immortality. In this sense, the mind was synonymous with the 'soul'. The *independence* and *separateness* of the mind hinged on its immaterial nature; independence was essential for morality, and separateness, for immortality. To challenge the immaterial nature of the mind was therefore to bring into question the basis for morality and immortality.

Rennell identified that in asserting that 'medullary matter is capable of sensation', Lawrence was challenging the immaterial nature of the mind by equating the mind with the organization of the brain. In challenging the immaterial nature of the mind, Lawrence was forcing a recognizance of certain moral issues. For instance, the majority of Lawrence's contemporaries regarded insanity as a disease of the mind, or a derangement of the will; the cause of insanity was considered to be moral and not physiological, as Lawrence analysed:

> They who consider the mental operations as acts of an immaterial being, and thus disconnect the sound state of mind from organization, act very consistently in disjoining insanity also from corporeal structure, and in representing it as a disease, not of the brain, but of the mind. Thus we come to treat the disease of an immaterial being, for which, suitably enough, moral treatment has been recommended.[52]

Lawrence's view on the cause of insanity radically departed from his contemporaries. His unequivocal conclusion on insanity as the disease of the brain evinced certain authority as befit a surgeon of the Bethlem Hospital, a mental asylum:

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[52] Lawrence, (1819), 97.

> I firmly believe, on the contrary, that the various forms of insanity, that all the affectations comprehended under the general term of mental derangement, are only evidences of cerebral affectations, disordered manifestations of those organs whose healthy action produces the phenomena called mental; in short, symptoms of diseased brain.[53]

If Lawrence's view on insanity was conceded, it would mean the huge stigma attached to insanity as a kind of moral depravation was unjustified. Rennell did not directly address Lawrence's view on insanity in *Remarks*, but in a similar vein, Bichat had argued that passions were organic impulses, and this point was identified by Rennell as morally subversive.[54] In seeking a physical cause for passions or insanity, both Bichat and Lawrence were moving human behaviour into the area of physiological determinism. Moral responsibility presupposes a genuine existence of free will; any form of determinism questions the genuine existence of free will, and in turn, the basis of moral responsibility.

Though Rennell did not argue for the existence of free will as the concomitant of moral responsibility, he was concerned by Bichat's exertions that:

> The character... is the physiognomy of the passions; the temperament is that of the internal functions: as both are constantly the same, and not influenced by habit and exercise, they cannot be affected by education.[55]

Drawing an analogy with circulation and respiration, which are not under the influence of the will, Bichat observed that 'the character, and consequently the passion ... are the produce of the actions of all the internal organs'. This notion was carried to its fullest extent by Sir T. C. Morgan, who asserted that 'good and evil are principles intelligible only as they relate to the laws of organic existence'.[56] Rennell maintained that if this line of reasoning was to be consistently applied, then a man was not different from a cabbage, for Bichat had also represented 'organic life as the assemblage of those functions which the animal has in common with the vegetable'.

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[53] Lawrence, (1819), 97.

[54] Lawrence's lectures containing his view on insanity and thought were published in 1819, same year as *Remarks* was published, which might have explained why Rennell did not address the subject of insanity directly.

[55] Bichat, *Recherches sur la vie et la mort* (Paris, 1800); quoted in Rennell, *Remarks*, 56; the translation is from Dr Rees' *Encyclopaedia*, 121. How faithful the translation was is perhaps secondary to our discussion, which focuses on Rennell's interpretation of Lawrence's ideas as influenced by Bichat.

[56] Quoted in *Remarks*, 61.

Applying the rules of logic, Rennell argued that if passions were mere organic impulses, then according to Bichat:

> ... a cabbage and a man, having the functions of organic life in common, and the passions being among those functions, it follows that jealousy, anger, revenge, and love are the common affections of the man and the cabbage.[57]

Rennell was concerned that the views of life after Bichat would inculcate a morality for the young students in Lawrence's immediate audience in which 'all attempts to soften and exalt the passions [were deemed] useless'.[58]

Apart from its direct moral implications, Rennell was concerned that human distinctiveness would be blurred, if not lost, if man and cabbage were equally governed by organic impulses. To Rennell, the human mind was what set man apart from all other living forms. Bichat classified all life into two tiers: vegetables and animals, with the possession of *volition* in animals being the distinguishing principle. Rennell modified the classification into a three-tier structure, allowing a further distinction between man and animals, introducing a third principle of life, *understanding*, as peculiar to man alone. In the lower classes of animals, volition took the form of instincts; in higher forms of animal life, volition was exhibited in varying degrees of 'sagacity, docility, instinct, and even into a species of practical judgement'. However, it was *understanding* that 'forms one of the most striking distinctions between the two creatures [animals and man], as it proves the animal destitute of that leading quality, which marks the human understanding, moral responsibility'.[59]

Rennell's objections to the removal of mind-brain duality, while primarily moral in nature, were underpinned by his metaphysical concerns. He went as far as affirming that 'there is a close connection between the power of thinking and the brain, but it by no means follows, that they are, therefore, one and the same', -- for 'connection is not identity'.[60] He argued that properties common to matter like extension, hardness, impenetrability, divisibility could not be used to denote thought? How could medullary matter think, when thought and matter shared no common properties at all? Furthermore, Rennell maintained that the mind must have an independent existence from the brain, giving as evidence examples where the

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[57] Rennell, *Remarks*, 58.

[58] Ibid., 59.

[59] Ibid., 73-7.

[60] Rennell, *Remarks*, 91& 95.

impairment of certain parts of the brain caused no impediments to the mental faculties. 'Portions of the brain', argued Rennell, 'various in situation and size, have been found to have been entirely disorganized, yet no single power of the mind was impaired, even to the very day of the patient's death'.[61]

Essentially, Rennell considered the brain as the link between the immaterial mind and the material world: 'The brain is the organ or instrument by which the mind operates on matter', and it is 'the chain of communication between the mind and the material world'.[62] But he staunchly maintained the independent and separate existence of the mind from the brain. Aware of the many difficulties posed by adopting mind-brain duality, Rennell continued, 'How indeed the brain and the thinking principle are connected, and in what manner they mutually affect each other, is beyond the reach of our faculties to discover'.[63] He was more concerned, however, by the questions raised by the monistic position of identifying the mind with the brain. For instance, Rennell observed that in common with bodily matter, the brain underwent within itself precisely the same changes as the remainder of the body. If the brain was the mind, the brain particles would be undergoing changes all the time, how could the continuity of thought and memory be maintained? To Rennell, an identity of the mind with the brain raised all sorts of questions concerning the continuity of consciousness and personality, issues that remain pertinent for the philosophers, psychologists, and cognitive scientists in our time.

> If the particles of the brain, either separately or in a mass, were capable of consciousness, then after their removal the consciousness which they produced must for ever cease. The consequence of which would be, that personal identity must be destroyed, and that no man could be the same individual being that he was ten years ago ... *it is something beyond the brain* that makes the man at every period of his life the same: it is consciousness, that amidst the perpetual change of our material particles, unites every link of successive being in one indissoluble chain.[64]

This 'something beyond the brain' for the intellectual life was described by Rennell as an 'independent principle, capable of a separate existence'. In a like manner, Rennell asserted that organization 'being nothing more than the arrangement of

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[61] Ibid.,100.

[62] Ibid.,101.

[63] Ibid.,101-2.

[64] Rennell, *Remarks*, 97; italics mine.

instrument, there must be something beyond to bring these instruments into action'.[65] As strongly as he had argued against the mind being the same as the brain, Rennell argued that life could not be the result of organization. The 'something beyond' organization was the soul. In his 1817 article in *British Critic*, Rennell effectively equated the *living principle* with the soul as follows:

> The existence of an independent living principle superadded to our animal structure, is strongly denied by Mr Lawrence; ... by this denial he controverts also the very existence of the soul; so that after having lived for our natural time, and having re-produced our kind, we have answered the purpose of our creation, and -- are no more.[66]

The living principle, supposed to be a subtile, immaterial substance, conformed to the prerequisite of the religious soul. The concept of 'superaddition' of the living principle was all important in religious terms, for it conveniently allowed for a separate existence of the soul from the body.[67] In this respect, Rennell seemed to distinguish between the mind and the soul by observing that there were two lives in man: the external life and the intellectual life. A certain hierarchy seemed to subsist even between the soul and the mind, with the former being 'only a power' and required a substance in which to reside, while the latter was 'a principle, capable of a separate existence':

> [The two lives] are therefore affected by death in two different ways: the life of vegetation cannot exist without its body, it ceases therefore to act, when the substance in which it resides, by a disturbance in its organization, is incapable of being acted upon; the intellectual life, as it has an independent existence, so it must suffer an independent extinction.[68]

Though not explicitly stated, in distinguishing the two lives, Rennell seemed to have assigned the soul as an animating power to enliven bodily matter, and the mind as the immaterial principle which embodied consciousness and preserved human identity.

Which of these two lives had immortality in Rennell's belief? He went so far as to say, 'As then the two lives are so different in their nature, we have no reason to conclude that they will terminate together'.[69] However, he was ambiguous as to whether it was the mind or the soul that was the ultimate agent for human

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[65] Ibid., 81.

[66] Rennell, *British Critic*, 8 (1817): 72.

[67] The use of terms like 'living principle' and 'superaddition' would suggest that Rennell endorsed the Hunterian theory of life.

[68] Rennell, *Remarks*, 104.

[69] Ibid., 105.

immortality. His view on consciousness as the medium for the continuity of personality would suggest that it was the intellectual life that had an existence beyond death. With a negative statement: 'Nor is the apparent decay of the faculties of the soul any argument of its final extinction',[70] Rennell seemed to suggest that the soul could have a continuous existence after the termination of the external life. He seemed incapable of denying immortality to either the soul or the mind. Perhaps, as did most of his contemporaries, Rennell conceived of the mind and the soul interchangeably, as illustrated by his description of the state of dreaming right in the midst of discussing how thought could not be from matter: [71]

> Perception, that faculty of the soul which unites it with the external world, is then suspended, ... the soul is transported ... into a world of its own creation. There appears to be an activity in the motions, and a perfection in the faculties of the mind, ...A better notion of the separate and independent existence of the soul, could not be formed, than from our observations on the phenomena of dreaming.[72]

What was unequivocal to Rennell was that the mind or the soul was independent of any material organs; it was this independence from matter that would ensure its separate existence beyond the bodily dissolution of the material brain or body, thereby retaining the prospect of human immortality.

In his critique of Lawrence's theory of life as organization, Rennell employed primarily the rules of logic to expose what he considered the fallacies in Lawerence's reasoning. For instance, Lawrence's analogy that 'organization is the instrument, vital properties the acting power, function the mode of action and life the result' was rendered insensible by Rennell's parallel example:

> ... a scalpel is the instrument, a hand the acting power, cutting the mode of action, and a wound the result. What would Mr Lawrence say to the man who asserted, that the wound was co-existent with the scalpel, or again that the act of cutting was a wound?[73]

Similar treatment was given to two of Lawrence's key assertions: that 'organization is the peculiar composition which distinguishes living bodies', and that 'organization is the instrument which produces life as its result'. Rennell inferred therefore that

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[70] Ibid., 110.

[71] There was much fluidity in the meaning of 'mind' and 'soul' in this period. The two terms were often interchangeable; for instance: 'Mr Lawrence very plainly declares himself satisfied that the *brain* ... is of itself capable of thought; and is, in fact, that which is called the mind or the soul.' *Edinburgh Monthly Magazine*, 3 (1820): 69-88, 84.

[72] Rennell, *Remarks*, 93.

[73] Ibid., 67.

'according to Mr Lawrence, "*life is the result of* the peculiar composition which distinguishes living bodies"'. This was not exactly what Lawrence said, but Rennell applied the rules of logic by conjoining *life is the result of organization*, and *organization is the peculiar composition* of living bodies, to arrive at the seemingly circular claim. As explained by Rennell, the nonsensibility lies in that life, far from being the 'result' becomes 'a component part' of organization; 'in other words, we first take for granted the existence of life, and then we prove it to result from its own existence'.[74]

To Rennell, organization was 'nothing more than a system of parts so constructed and arranged, as to co-operate to one common purpose'.[75] As a proof of their independence, Rennell raised the point that organization continued to exist after life was gone, and that 'it began to exist before life was imparted':

> ... it is well known that the organs are gradually forming, and arrive at a considerable degree of perfection before they are endowed with any other than a borrowed life. Before a certain stage of its existence, the death of its parent will inevitably cause the death of the offspring, evidently shewing that its life, if it may be so called, was not its own ... Thus then the organization of a body commences before its own independent life, as it continues after its death.[76]

Rennell's understanding of organization seemed to be confined to the *structural* rather than the *corpuscular* level, which would have been closer to Lawrence's definition. For Rennell, it was as inconceivable for life to result from organization as it was for thought to arise from matter. 'The body having nothing essentially active either on its nature or its construction, from whence did the motion originally arise?'[77] Whether it was the soul as the animating power to organized body, or the mind as the 'something beyond' the brain, animal life or intellectual life were both, to Rennell, undoubtedly transcendent to matter.

The high level of engagement with the scientific content in Lawrence's ideas in the *Remarks* is a credit to Rennell. He was *not* merely 'invading a physiological issue with theological arguments'.[78] It is all too easy to appreciate the *Remarks* as a theological tract against an area of new science, and to miss the more fundamental

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[74] Ibid., 66.

[75] Ibid., 80-1.

[76] Ibid., 82.

[77] Ibid., 123.

[78] Quoting Goodfield-Toulmin, *op. cit.*, 316.

differences in the two philosophical systems that have shaped the metaphysics in science and in religion. An article in the *Gentleman's Magazine* reviewed Rennell's *Remarks* favourably and also unwittingly, touched upon the crux of the matter by lamenting that it was 'a misfortune that people now [knew] nothing of Plato's doctrine of ideas'. Aristotle was maligned because:

> When Aristotle ... first reduced all elementary properties to air, earth, fire, and water, it is evident that every thing went wrong till the system was overthrown by Lord Bacon.[79]

In the article, the religious doctrine of the soul merged seamlessly with Plato's incorporeal existence of ideas, and the rightful allegiance to a Platonic soul was presented as a *fait accompli*. The allegiance to a Platonic soul not only characterised *Remarks*, but might have influenced the shaping of Rennell's arguments. For instance, the nuances of the tripartite system in Plato's *Timaeus* which distinguished the human mind from the soul, with the former being the divinely-endowed entity capable of immortality, and the latter, the animating force, were reflected in the *Remarks*, in Rennell's distinction of the external and intellectual lives.[80]

At the heart of this seeming clash between science and religion, was a most fundamental clash of two systems of philosophy – that of Plato and Aristotle. In the area of life-matter issues, Plato conceived life as *transcendent* of matter; Aristotle viewed life as *immanent* in matter. In formulating the theological doctrines pertaining to the body, the mind and the soul, the Platonic influence had dominated in western Christendom. The dualism behind the life-matter and mind-brain relationships in the Christian beliefs bore the essence of the Platonic soul, whose origin and destiny was utterly transcendent from the material world.

Rennell's attempt to expose the contradiction and confusion in Lawrence's reasoning by the rules of logic somewhat missed the mark of Lawrence's position. In seeing life as residing in organization, Lawrence's view on life was essentially Aristotelian; it was the fundamental belief in matter as the ultimate medium whereby life could be understood. It would not be far-fetched to state that for Lawrence, it was *only* by studying matter itself that one might understand life eventually. Like

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[79] *Gentleman's Magazine*, 89 (1819): 438.

[80] The mind *nous* has parity over the other parts of the soul: the passionate *thymos* residing in the heart, and the appetitive *epithymetikon* residing in the liver. Furthermore, the human mind in the Platonic scheme is the only part of the human soul which is both immaterial and immortal. Thymos and epithymetikon, though immaterial are mortal. Plants and animals, as living systems, possess the soul, but since they do not have *nous*, they will not attain immortality in the Platonic scheme.

Lawrence, Aristotle was a medical man; and perhaps it was his training in medicine that brought Aristotle to embrace a view of life as immanent in matter. In seeing life as residing in matter, as *enformed,* the Aristotelian view was certainly a more fruitful approach in scientific enquiry. That the *Timaeus* should be so revered when Christianity was formulating its doctrine was a historical happenstance that cast such a long shadow on western thought that it is only too easy to forget, that the seed for the clash between Lawrence and Rennell was long sown in Athens before Christ was born, when Aristotle's Lyceum vied with Plato's Academy for supremacy.

IV

In the conclusion of the *Remarks*, Rennell was concerned to reinforce one of the cornerstone arguments of natural theology – that God was the first and independent cause in nature. Earlier in the *Remarks*, Rennell had defined life as the 'inherent activity' to distinguish the activity of all living bodies from the activity that was produced by external cause like material impulse or chemical agency. This 'inherent activity' could only be traced to God:

> It matters not through how many bodies we trace the succession of activity and motion, we must come at last to the hand from which the impulse was originally given, to the first intelligent, independent moving power. That power is God. He is the one supreme and perfect Being – independent in his existence, infinite in his wisdom, eternal in his duration – the author of all power, the source of all life, the cause of all motion.[81]

The necessity of a First Cause to explain the origin of life was likened to the need for the cause of Gravity. As a unifying concept, Gravity has been infinitely fruitful in explaining a multitude of physical phenomena, but even for Newton, 'Gravity must be caused by an agent, acting constantly according to certain laws'.[82] In other words, having discovered gravity as the cause of all motions does not in itself explain what causes gravity. Similarly, for Rennell, to define life as organization did not in itself explain the cause of life:

> Matter is first organized as a recipient of life, and after it is so organized, life is imparted. It is true that a living being is uniformly

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[81] Ibid.,124.

[82] Rennell quoting Newton, *Remarks*, 128.

> the channel by which life is communicated, but it is not, therefore, the cause of the communication.[83]

In his affirmation that organized matter is the channel for the communication of life, Rennell was much closer in giving Lawrence a fair hearing than Abernethy and many of his critics. Lawrence had similarly drawn parallels between 'organization' and 'gravity', on the limitation of gravity as an explanation of motion. Rennell differed crucially from Lawrence, however, in his need to attribute God as the First Cause when the limits of natural explanation were reached.

Lawrence never took up the position of being a critic of Rennell. True to his belief, he did not attempt to take up the theological grounds of his opponents to launch a defence. His caveat to his lecture given in 1817, that 'the theological doctrine of the soul, and its separate existence, has nothing to do with this physiological question' would suggest that he was aware of the theological issues he might be raising with his physiological views.

> It seems to me that this hypothesis, or fiction of a subtle invisible matter, animating the visible textures of animal bodes, and directing their motions, is only an example of that propensity on the human mind, which had led men at all times to account for those phenomena, of which the causes are not obvious, by the mysterious aid of higher and imaginary beings. ... all the appearances of nature, which the progress of science enables us to explain by means of natural causes, have been referred to the immediate operation of the divinity.[84]

In Lawrence, we are perhaps witnessing the emergence of the new scientist, as distinct from the natural philosophers of the Newtonian tradition. In this new scientist, to accept the limitations of knowledge at each stage was the prerequisite for a fruitful enquiry, and with this acceptance, the frontiers of knowledge could then be advanced stage by stage. Repeatedly, Lawrence stressed that our limitation in knowing was no reason for resorting to a divinity in order to supply an ultimate explanation. In respect of the life-matter duality, Lawrence had expressed the limits as follows:

> In the science of physiology we proceed on the observation of facts, of their order and connexion, ... We are thus led to admit the vital properties, ... as causes of the various phenomena; in the same way as attraction is recognised for the cause of various physical events. We

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[83] Rennell, *Remarks*, 126.

[84] Lawrence, (1816), 173-4.

> do not profess to explain *how* the living forces in one case, or attraction in the other, exert their agency.[85]

Lawrence's positive attitude towards the limits of knowledge in his scientific enquiries was ahead of his time. The majority of his contemporaries would concur with the stance taken by the *Edinburgh Monthly Review*, which regarded such acceptance as synonymous with the danger of ruling God out of the universe:

> The great danger to which those are exposed in the study of physical science, who are ignorant even of the first principles of intellectual science, is this – that being accustomed to account for all the phenomena of that science from mere secondary causes, they forgot the first cause of all things ... that there can be no law without a lawgiver.[86]

Lawrence did not give the impression that he was trying to disprove the existence of God in his physiological formulations. What he was at pains to establish was that 'God as the First Cause' was neither an explanation nor would it help to advance the frontiers of knowledge. In the area of mind-brain duality, Lawrence would rather accept the inability to explain *how* medullary matter could think, than to recourse to an immaterial mind as the thinking agent. In contention with the immaterialists, Lawrence emphatically related certain facts which he interpreted as inextricably linking thought with the brain:

> Thought, it is positively and dogmatically asserted, cannot be an act of matter. Yet no feelings, no thought, no intellectual operation has ever been seen except in conjunction with a brain; and living matter is acknowledged by most persons to be capable of what makes the nearest possible approach to thinking. The strongest advocate for immaterialism seeks no further than the body for his explanation of all the vital processes, of muscular contraction, ... He will not allow the brain to be capable of sensation.[87]

Physiological facts which indicate a greater importance of the brain beyond what the immaterialists would allow are: that the human brain 'receives one fifth of all the blood sent from the heart', that it is 'so peculiarly and delicately organized, nicely enveloped in successive membranes, and securely lodged in a solid bony case'. In fact, the human brain 'is better fed, clothed, and lodged than any other part'.[88] From observation and from experience, Lawrence the scientist had to admit that medullary

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[85] Lawrence, (1816), 165.

[86] *Edinburgh Monthly Review*, 3 (1820): 69-88, 82.

[87] Lawrence, (1819), 96.

[88] Lawrence, (1819), 92.

matter was capable of thought. Our ignorance as to how matter could think, in Lawrence's opinion, was no reason for *not* granting that matter could think.

> Shall I be told that thought is inconsistent with matter; that we cannot conceive how medullary can perceive, remember, judge, reason? I acknowledge that we are entirely ignorant how the parts of the brain accomplish these purposes – as we are how the liver secretes bile, how muscles contract, or how any other living purposes are effected; ... Experience is, in all these cases, our sole, if not sufficient instructress; and the constant conjunction of phenomena, ... is the sole ground for affirming a necessary connexion between them. If we go beyond this, and come to inquire the matter how, the mechanism by which these things are effected, we shall find every thing around us equally mysterious, equally incomprehensible – from the stone which falls to the earth, to the comet traversing the heavens -- ... from the formation of a maggot in putrid flesh, or a mite in cheese, to the production of a Newton or a Franklin.[89]

Rennell came close to sharing this acceptance of limitation of our knowledge with his comment that from 'certain experiments, we are enabled to infer the existence of gravity, and to calculate its laws; but how it operates, and in what manner it exists, we must be satisfied to remain in ignorance'.[90] This satisfaction to remain in ignorance, however, was not his ultimate position, but was inextricably bound up with the conception of a God who was the First Cause of all things. It was the God of the natural theologians, whose remit was to see in nature 'such irresistible proof a superintending Providence'.[91] In many ways, the Lawrence episode was a test case in this period of transition, when science was perhaps trying to break out of the strait-jacket imposed on it by natural theology. To all intents and purposes, Lawrence was pleading for leave to conduct his scientific enquiries without a hidden agenda of having to prove Nature's God. This 'hidden agenda' or expectation was reflected in D'Oyly's comment on the role of science and its relation to religion, which incidentally, also encapsulated the confusion of Lawerence's critics:

> It is not certainly to physiology that we look for the main proofs of the immateriality of the soul, and its continuance after death – we only ask that this valuable science may not be enlisted into the service of infidelity, ... that it may not be brought to invalidate those other proofs of the immaterial and immortal nature of the soul, which, in reality, it is calculated to support.[92]

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[89] Lawrence, (1819), 91.

[90] Rennell, *Remarks*, 68.

[91] Ibid., 48.

[92] D'Oyly, *Quarterly Review*, 22 (1819): 1-35, 31.

That physiology, or as Paley had favoured, comparative anatomy, should serve the role of being a powerful ally to natural theology was fully borne out by the *Bridgewater Treatises* of the 1830s. A publishing phenomenon, the treatises indicated the huge importance of physiology and anatomy as a domain for evidence of 'the power, wisdom, and goodness of God'. Out of the total eight treatises, six were devoted to the study of life or its structure: 1. Thomas Chalmers on the *Moral and Intellectual Constitution of Man*; 2. John Kidd on the *Physical Condition of Man'*; 3. Sir Charles Bell on *The Hand: Its Mechanism and Vital Endowments*; 4. Peter Mark Roget on *Animal and Vegetable Physiology*; 5. William Kirby on the *Instincts of Animals*; 6. William Prout on *The Function of Digestion*. The other two titles were: William Whewell on *Astronomy and Physics;* and William Buckland on *Geology and Mineralogy*. The 'varied blend of natural theology and popular science' of these treatises attracted 'extraordinary contemporary interest and "celebrity", resulting in unprecedented sales and widespread reviewing'.[93] The success of the *Bridgewater Treatises* as a form of 'popular science' suggested the strength of the tradition of natural theology well into the 1830s. While Lawrence was not alone in taking the stance that science should be separate from theology, he was certainly riding against the strong tides of natural theology in this controversy that spanned between 1816 and 1822.

V

'Materialism and Atheism go hand in hand', -- this was Rennell's overriding concern in his *Remarks*. Lawrence's ideas were judged to promote materialism and in turn, atheism. To what extent was Rennell's concern justified? In conclusion, this section examines Rennell's assertion that 'Materialism and Atheism go hand in hand' under three headings: theological, philosophical, and social.

Theologically, Rennell was concerned that if 'we have argued ourselves out of the existence of our soul, which is a spirit, by the same process, we argue ourselves out of the existence of the Almighty, which is a spirit also'.[94] The High-

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[93] Jonathan Topham, 'Science and popular education in the 1830s: the Role of the *Bridgewater Treatises*', *British Journal of History of Science*, 25 (1992): 397-430, 397.

[94] Rennell, *Remarks*, 64. Opening quotation to this chapter.

Church, Tory Anglicanism that Rennell represented would affirm the doctrine of the soul as the giver of life; the soul proceeded from God, who was a spirit; and the soul was a spirit like God. To argue that life did not depend on an immaterial soul but the material organization was to invalidate God as the first cause of life. To doubt the existence of the soul was tantamount to doubting the existence of God; and hence, in Rennell's mind, materialism and atheism went in tandem.

Was Lawrence an atheist then? There was evidence suggesting that Lawrence was a member of a city church of 'Free-thinking Christians'.[95] The sect was 'a quasi-Unitarian body'; their doctrines can be summarised as: 'they condemned the doctrine of the Fall; affirmed (with Luther) the Scriptural resurrection of the dead as against the immortality of the soul; disparaged death-bed repentance; censured public prayer; assailed alike Quakerism and Deism'.[96] Lawrence was alleged to have expressed 'doubts about the immortality of the soul, but to believe in the immortality of the body'. He was also reputed to have denied the inspiration of Scriptural authors, and disbelieved in the descent of all men from Adam and Eve.[97] Echoing Lawrence's views in this period was another prominent dissenting physician, John Elliotson, Professor of Medicine at London University from 1831. Infamous for his radical views, Elliotson argued that 'the notion of the "immortality of a supposed system distinct from the body" was a "heathen doctrine"; that both scripture and science agreed that the only means of personal survival was by "the resurrection of the what we obviously are – *bodies*, and that through a miracle of the Almighty'. In respect of the nature of life and the mind, Elliotson asserted, 'As I cannot conceive *life* any more than attraction unless possessed by matter, so I cannot

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[95] Huge Lake in *Physician to Shelley and Mary*, (London, 1965) noted a letter of Percy Shelley referring to a wedding he attended of a 'Mr. William Lawrence and Miss Jane Clarke' on 21 September 1817. The couple objected to the legal necessity of a religious ceremony and refused to kneel during it. Since Lawrence was in fact Shelley's physician, and Shelley was in London to seek medical advice at this time, residing at Bishopsgate, it was very likely that Lake's inference was correct. If so, this unconventional marriage went unnoticed by Burke in *Peerage* (1970), 1555, who only referred to Lawrence's marriage to Louisa Trevor on 14 August 1828. See Bynum, *op. cit.*, 134.

[96] J.M. Robertson, *A History of Freethought in the Nineteenth Century*, 2 vols., (London, 1969), I: 91. In the 1810s, the sect published a *Quarterly Register* as a forum for doctrinal discussions. For example, the lead article in the first volume (Jan 1811) was 'on the Lord's supper with a view to demonstrate that it has no foundation in reason or scripture' (1-27). Another article in the same issue was an exegesis of Matthew x:28, Luke xii:19, Genesis xiv:21, Numbers ix: 6, and Acts ii:27 against the interpretation of a 'separate existence of an immortal soul' (28-38). (Material consulted at the British Library.)

[97] Bynum, *op. cit.*150 & 152.

conceive *mind* unless possessed by a brain endowed with life'.[98]

Taking the evidence as a whole, while Lawrence's religious affiliation was unorthodox, he was not atheistic. A powerful conclusion can be drawn that at the heart of the Lawrence-Rennell debate, it was not so much religion against science, as different Christian religious beliefs that were at odds in respect of the nature of man and the basis of a future life. Theologically therefore, materialism did not necessarily lead to atheism, as demonstrated by the dissenting tradition, which disowned the immaterial soul and based their hopes for immortality on the resurrection of the material body. Underlying this theological impasse between the different sections of Christian believers (orthodox and dissenting) was a philosophical tension that had underlain Christian orthodoxy ever since the inception of its faith at the Hellenistic period.

Philosophically, the 'orthodox' Christian beliefs were too rooted in Platonism to take cognizance of the alternative views of the dissenting Christians on the issue of the soul and the basis of immortality. The philosophy of Joseph Priestley of man as *one uniform substance* rather than two natures as in the dualistic tradition of the Platonic system could have provided a valuable starting point for such a re-cognizance. Priestley's conception of man further allowed him to derive a theology of a future state based on bodily resurrection. However, as a Unitarian minister, Priestley was firmly branded as a dissenter, his theology condemned as heresy, and political exile his eventual choice. In appraising Lawrence's lectures, the Hackney group in fact saw the lectures 'as an authoritative re-publication of the Priestleian materialism they politically defeated in the 1790s and the early 1800s'.[99] As a Hackney member, Rennell probably was unable to consider Priestley's materialism as any different from the French materialists like Diderot, La Mettrie and d'Holbach. Rennell was right in perceiving the dangers of the philosophy of the French materialists as ultimately tending to atheism. Through Cartesianism, the French materialists were dangerous because they philosophised from within the same dualistic system of Platonism. What they did was to push this dualistic conception of man to its very limit, separating body and soul so categorically that the soul receded into the background. Accordingly, they effectively arrived at a form of materialism

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[98] Elliotson, *Human Physiology* (London, 1835), 47-8; quoted in Jacyna, 'Immanence or Transcendence', *op. cit.*, 313 & 316.

[99] Pietro Corsi, *op. cit.*, 56.

that reduced man to organised matter, levelling the distinction between man and the animals, likening vital functions with those of a machine. Furthermore, the reductionist form of French materialism was inextricably coupled with atheism. Hailed as 'the first of the atheists', Diderot's achievement was in place of God, he offered matter as 'the creative source of all change'. Diderot argued his case:

> ... not by repudiating the mathematical physics of Descartes or the universal mechanics of Newton but by bringing them, as he contended, to fulfilment. He expanded the principles of Descartes and freed them from an unwarranted metaphysics. In so doing, he realized his own Universal Mechanics, ... but it was a science which did not point beyond itself to nonmechanical principles.[100]

As far as the French materialists were concerned, materialism and atheism did go hand in hand. When Rennell penned his *Remarks*, it was this branch of materialism that coloured his reading of Lawrence's lectures, which he decried along with 'the subtle insinuations and designing sophistry of D'Alembert and his fraternity; who were the first to lay the foundation of that school of infidelity'.[101] In fact, Priestley's ideas 'were hardly even perceived as different from earlier versions of materialism'.[102] In failing to perceive Priestley's materialism as any different from the French, for instance, the potential of re-working the Christian theology for the body, the mind and the soul that could have met the challenges of ideas such as those advanced in Lawrence's lectures was never realised. Rennell, along with the Hackney group, probably viewed his campaign against Lawrence's lectures as a continuation of the purge against Priestleian materialism.

The possibility of re-examining the doctrine of the soul was further beset by the 'lack of a well-defined canon of Anglican doctrine and of a coherent grouping of professional theologians'.[103] As suggested by Corsi, this intellectual weakness was reflected, 'in the plurality of views expressed by contributors to the *British Critic*, the journal controlled by the Hackney leaders'. An illustration of this plurality was the critical responses to Lawrence's lectures as distinct from those to the craniology of Gall and Spurzheim. Rennell was terse in his dismissal of craniology, saying that the 'system of Gall and Spurzheim, however ingenious or amusing in theory it may be, is

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[100] Michael J. Buckley, *At the Origins of Modern Atheism* (Yale, 1987), 249.

[101] Rennell, *Remarks*, 11. Diderot wrote *D'Alembert's Dream*.

[102] John Yolton, *Thinking Matter* (Oxford, 1983), 125.

[103] Corsi, *op. cit.*, 49.

annihilated by the commonest reference to fact'.[104] Significantly, however, Rennell did not charge craniology with materialism. Rennell indicated his reservation by stating that: 'It must be allowed, that this system does not, of logical necessity, terminate in materialism'.[105] Similarly, a lengthy article in the *British Critic* was categorical in clearing craniology of materialism:

> A priori, we conceive that no valid objection can be raised against the system, as tending in the smallest degree either to materialism or to infidelity.[106]

The reviewer emphatically stated, 'we were convinced, that [the system] led to no conclusion really hostile to religion, or subversive of good morals'.[107] That Lawrence's lectures should be censured and condemned while craniology was cleared of any charges of materialism, was an inconsistency that demands an explanation. The evidence suggests that Rennell and other like-minded thinkers were swayed by what they took to be the very different social implications of craniology and Lawrence's more familiar kind of materialism. Craniology under Spurzheim developed into the science of phrenology with an explicit social agenda of educational reforms and self-improvement of individuals. While craniology could be seen, therefore, as a movement in keeping with the conservative values of early nineteenth-century Britain, the same could not be said for Lawrence's science. On the contrary, the ideas in Lawrence's lectures were taken up and deployed by political radicals, such as Richard Carlile and Percy Shelley, in order to undermine the religious basis of morality as a means for political control.

As discussed in Chapter Two, the religious basis of morality depended on an immaterial soul as the vehicle for an existence in a future state. Two examples of sermons illustrate how the doctrine of the soul was held to crucial to the message of contentment with our earthly life, -- an effective form of social control through religion. As Archdeacon of Carlisle, Paley addressed 'the labouring part of the British public' on the *Reasons for Contentment* (1793). Speaking of the roles of Providence and religion, Paley instructed his working-class audience:

> But Providence, which foresaw, which appointed, indeed the necessity to which human affairs are subjected... hath contrived that , whilst fortunes are only for a few, the rest of mankind may be happy without

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[104] Rennell, *Remarks*, 100.

[105] Hewett C. Watson, *Statistics of Phrenology* (London, 1836), 20, citing Rennell.

[106] Anon., 'Spurzheim's Physiognomical System', *British Critic*, 3 (N.S. 1815): 468-487, 487.

[107] Ibid, 468.

> them.... Religion smoothes all inequalities, because it unfolds a prospect which makes all earthly distinctions nothing.[108]

The prospect religion was supposed to unfold related to the heavenly realm, the kingdom to where the immaterial and immortal soul would soar after death. As to their earthly life as labourers, Paley enlightened his audience, 'that a life of labour, such I mean as is led by the labouring part of mankind in this country, has advantages in it, which compensates all its inconveniences'. The sermon concluded with a stern warning against the miseries wrought by revolutions:

> that changes of condition, which are attended with a breaking up and sacrifice of our ancient course and habit of living, never can be productive of happiness, ... to covet the stations or fortunes of the rich, as to wish to seize them by force, or through the medium of public uproar and confusion, is not only wickedness, but folly; ... *that it is not only to venture out to sea in a storm, but to venture for nothing.*[109]

A sermon by Rennell at St. Paul's Cathedral on 17 May, 1821 on John xviii:36: 'Jesus answered, My Kingdom is not of this world' illustrates how the prospect of a future state was woven into a message of preservation of the *status quo*:

> 'The knowledge of Christ is not of this world'. The prospects which it opens, the motives which it suggests, ... are those of another and a better country, '*that is an heavenly*'. The influence which it exercises over the hearts and affections of its subjects is purely spiritual, elevating the mind above all transitory objects, and fixing its ultimate view '*upon things above and not on things on the earth.*' On the other hand, the peculiar responsibility which it attaches to all actions of life, enforces the discharge of every earthly duty, and strengthens the obligation of every social tie. Thus then by keeping the one in due subserviency to the other does it reconcile the opposite interests of two contending worlds.[110]

Rennell's sermon was directed at the domestic situations in post-Napoleonic Britain. In 1816 and 1819, Lawrence published his two controversial series of lectures. Between those years, Britain witnessed series after series of mob violence, mass gatherings and economic distresses of rising unemployment and increased food prices. The state of distress in 1816, for instance, caused Charles Western, a Member of Parliament, to propose that the House should resolve itself into a Committee of the whole House, to take into consideration the distressed state of

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[108] William Paley, *Reasons for Contentment*, 2-pence pamphlet (London, 1793), 8 & 21.

[109] Ibid., 22, author's italics.

[110] Thomas Rennell, *The Unambitious Views of the Church of Christ* (London, 1822), 7.

agriculture of the United Kingdom.[111] Mob riots broke out in the countryside. In Cambridge, where Rennell was installed as the Christian Advocate, a mob of 1500 strong gathered in 1816, arming themselves with long heavy sticks studded with short iron pikes, marching to their flag inscribed *'Bread or Blood'*.[112] The riots spread from the countryside to the industrial townships, culminating in the Spa Fields meeting in London on 2nd December 1816, which involved a plot to take the Tower and seize the city. The Seditious Meetings Act was passed in 1817 stipulating that a licence had to be obtained for any assemblies of people. Though this measure was designed with surveillance of radical politics in mind, the dissemination of science was caught up in it. For instance, in 1817, the *Quarterly Review* implicated the Philosophical Society of Newcastle 'on the slender grounds that Thomas Spence had presented his dangerous views before it in the 1780s'.[113] The reaction (or 'over-reaction') of the public to Lawrence's *Lectures* has to be understood against the socio-political climate in Britain in those anxious years of anti-Jacobinism immediately after the Napoleonic wars. London, being the capital, was the centre of such vigilance, and the geographical location for the deliverance of Lawrence's *Lectures* was a precipitating factor in the debate.

The year Rennell published the *Remarks* was the year of the 'Peterloo' massacre, 1819. The loss of nerves by the governing magistrates in Manchester over the peaceful gathering of some 50,000 labourers in August 1819 ended in the bloodshed of the innocent, children included. The Prime Minister, Lord Liverpool, declared the action of the Manchester magistrates as 'substantially right', though not altogether 'prudent'; and 'there remained no alternative but to support them'.[114] One of the consequences of 'Peterloo' was the passing of the Six Acts in November 1820, intended to strengthen the laws governing public meetings, and the curb the 'unbound liberty' of the Radical press. It was against these domestic situations that Rennell preached his sermon stressing the role of religion for social stability:

> It is not by preserving, but by corrupting the religion of a nation, that despotism and tyranny promote their sway. Eradicate from a people the fear of God, ... loosen the bands of national religion, subvert the

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[111] See *Edinburgh Review*, 26 (1816): 255-281 for the speeches by Western on 7 March.

[112] See *Scots Magazine*, 78 (1816): 470 and *The Times*, 30 May 1816. See also A. J. Peacock, *Bread or Blood, The Agrarian Riots in East Anglia, 1816* (London, 1965).

[113] See Ian Inkster, 'London Science and the Seditious Meetings Act of 1817', *British Journal for the History of Science*, 12 (1979): 192-196, 195.

[114] E.P.Thompson, *The Making of the English Working Class* (Harmondsworth, 1963), 750-1.

> foundations of Christian morality, ... and you lead them through the fearful stages of clamour and licentiousness, rebellion and bloodshed, to the final doom of usurpation and tyranny.[115]

Rennell was clearly concerned that Lawrence's lectures were subversive to the foundations of Christian morality. Was it a concern with any basis? A succinct example can be found in the political career of Richard Carlile (1790-1843), as supporting evidence for Rennell's concern. Joel Wiener, Carlile's biographer, names Lawrence as a crucial writer who 'impelled Carlile in the direction of atheism'.[116] In formulating his atheistic radicalism, Lawrence's science was a source of inspiration to Carlile. Some ideas contained in Lawrence's lectures were given a decidedly atheistic edge by Carlile, for instance:

> Instead of viewing ourselves as the particular and partial objects of the care of a great Diety, ... made in the express image of the Diety, ... we should consider ourselves but as atoms of organized matter, ... whose existence in a state of organization ... is a matter of no importance in the laws and operations of Nature; we should view ourselves with the same feelings, as we view the leaf which rises in the Spring ... and falls in the autumn, and then serves no further purpose but to fertilise the earth for a fresh production.[117]

Wiener describes that a central aspect of Carlile's atheism was 'a faith in the regenerative powers of science'; it was Carlile's alternative to theism. In his tract *An Address to Men of Science*, Carlile propounded that 'Superstition corrupts and deteriorates all the human passions', while 'science alone is qualified to amend and moralize them'.[118] The subversive danger to morals of Lawrence's lectures as perceived by the religious establishment was borne out in the deployment of materialistic science as a means to replace religion as the basis for morals.

Carlile's career as a radical reformer further provides the context for understanding the seditious potential of materialistic science on the working class as feared by the ruling elite. 'Enthusiasm for science constituted an important facet of working-class culture in the nineteenth century. Lectures carried the latest scientific ideas to eager audiences of artisans and mechanics, while popular journals gave these ideas detailed coverage'.[119] The son of a shoe-maker, Carlile identified with the

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[115] Rennell, *The Unambitious Views, op. cit.*, 17.

[116] Joel H. Wiener, *Radicalism and Freethought in Nineteenth Century Britain - The Life of Richard Carlile* (London, 1983), 110.

[117] Richard Carlile, *Address to Men of Science* (London, 1821), 6.

[118] Ibid., 16.

[119] Wiener, *op. cit.*, 111.

working classes. He told his followers, 'There are no mysteries in nature, but what man, by the aid and progress of science might ultimately apprehend'.[120] The message proclaimed here was that man, allied with science, would be masters of the Universe. The intended political message by Carlile for his working-class followers was that, 'empowered' by science, they would ultimately break free from their station in society.

Carlile's atheistic radicalism made him 'a leader of an "infidel challenge" against orthodox religion', and fed directly into his role as one of the most important British working-class reformers of the nineteenth century. But what was singular in Carlile's achievements was the fight he staged to vindicate the principle of free discussion. For this, he was credited as 'having done more than any other Englishmen in his day for the freedom of the Press', as having 'made the greatest stand in the nineteenth century for freedom of speech and writing'.[121] It was in his role as a fighter for the freedom of speech that Carlile's direct involvement in the Lawrence episode can be traced.

Written within two months of the Chancery lawsuit in May 1821, *An Address* was a direct rebuttal of the verdict. In his tract, Carlile referred to Lawrence as 'that spirited young man' who had shown 'a disposition in his public lectures to discountenance and attack those detailed impostures and superstitions of Priestcraft'. Indignant on Lawrence's behalf, Carlile declared:

> I will every Man of Science and opportunity of publishing his sentiments without any direct danger to himself: I will fill the gap of persecution for him, if a victim be still necessary to satisfy the revenge of dying Priestcraft.[122]

Unwittingly, the verdict of the Chancery lawsuit that Lawrence's lectures were *blasphemous*, *seditious*, or *immoral* had the direct effect of raising the profile of Lawrence's lectures for Carlile's political ends. Carlile's publishing career was beleaguered by political suppressions of a similar kind. Having read Thomas Paine for the first time in 1816 and greatly admired him, Carlile published the theological, political and other works of Paine. The publication of Paine's works at the dawn of the post-Napoleonic era was perhaps as ill-timed (unless provocation was the intent) as Lawrence's Francophile declarations were ill-judged. For these publications,

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[120] As quoted in Wiener, 111.

[121] 'Richard Carlile', *Dictionary of National Biography*, 9 (1887): 103.

[122] Carlile, *An Address*, 20.

Carlile was charged for bringing forth opinions which brought into disrepute the Holy Scriptures. By October 1819, Carlile had six indictments against him in connection with his publications of Paine's works. In November, he faced his three-day trial and was sentenced to £1,500 fine and three years' imprisonment in Dorchester gaol. Faced with his imminent trial, Carlile published *The Accusation, Condemnation, and Abjuration of Galileo before the Holy Inquisition* in 1819, drawing parallels between the plight of Galileo and his own:

> The *Magnificent Inquisitor General* of that day, and of that country, and the *Magnificient Inquisitor General* of the present day, and of this country, are men of the same stamp and disposition. The charge against Galileo was, that his opinions had a tendency to bring into disrepute the Holy Scriptures; the charge against me is, that my publications have the same tendency. Galileo was imprisoned, but before the expiration of his sentence, his persecutors were convinced of their ignorance and folly. Galileo was liberated, and his astronomical opinions espoused, even by his former persecutors. For the honour of my country, I hope, that a jury will not be found in the present day to become a bar to scientific research, progressive improvement and free discussion on all subjects.[123]

It was probably not just his own plight that Carlile had in mind when he wrote the preface. The allusion to the ignorance and folly of Galileo's Inquisitor, the plea for freedom of scientific research and discussion, were more immediately relevant to Lawrence's plight. Finally, with Lord Eldon's verdict which turned Lawrence's intellectual property into *free* public property, Carlile published in 1823 Lawrence's condemned lectures, and in sarcasm, dedicated his edition to Lord Eldon for 'his injustice in refusing to establish the Author's Right of Property in these lectures'.[124]

What was Lawrence's response to Carlile's involvement in publicising his lectures? There was evidence that two men were undoubtedly acquainted: First, amongst those who subscribed to the relief of Carlile when he was in Dorchestor gaol was a 'W.L.' of London, who contributed 3 shillings in 1821. Secondly, Lawrence was the physician who ministered to Carlile in his last illness. Finally, Carlile willed his body to Lawrence for dissection, though Lawrence decided not to carry out a post-mortem. Lawrence's sympathy for Carlile's cause was implicit but the extent of his support was not so easy to assess. Lawrence seemed to be careful to maintain his distance for he stood to lose a lot by being publicly associated with, or

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[123] Carlile, *An Address*, iv.

[124] Goodfield-Toulmin, *op. cit.*, 307, footnote 41.

openly avowing his support for Carlile. One conclusion we are allowed to draw is that, Lawrence's plea for setting up boundaries of knowledge, if understood to mean that science should not and would not influence society or theology, would be disproved by the work of Carlile. It was in the winter of 1816-17 that Carlile, hitherto a respectable tinman, faced with a seemingly hopeless prospect for employment for the artisan class in the post-war depression, launched his career as a radical reformer through the use of the press. The economic difficulties of 1816-1820 provided the social climate for Lawrence's scientific ideas to be radicalised for political ends. To censure the religious establishment as obscurantist would be to miss the wide-ranging import of Lawrence's lectures, especially in those years of economic chaos and social unrest, which Rennell had not been totally inaccurate in naming. For better or worse, Lawrence's scientific views had religious and social implications. In its final analysis, it was not the doctrine of the soul *per se* that was at stake, but the religious basis for morality that Rennell considered being jeopardised by the materialism in Lawrence's lectures. For Rennell, religion, with its belief in the future state, was the vehicle for enforcing morality, and if the religious basis of morality was undermined, it was much feared that would, in turn, lead the masses to revolution.

Two Sciences of the Mind

> The question of Materialism is, whether the *substance* of which the thinking principle is composed be matter or spirit? ... According to Phrenology, morality and natural religion originate in, and emanate from, the primitive constitution of the mental powers themselves. ...The only points certainly known are, that in this life mind is never manifested without brain, and that the powers of manifestation vary with the size and condition of the brain or its particular parts.... [If] God has made the brain to think, ... His objects in creating man will not be defeated on account of his having chosen a *wrong substance* out of which to constitute the thinking principle.
>
> George Combe, 1824[1]

> ... should we ever be convinced that we are not moral agents, we should likewise be convinced that there exists no moral order in the universe, and no supreme intelligence by which that moral order is established, sustained, and regulated. Theology is thus again wholly dependent on Psychology; for, with the proof of the moral nature of man, stands or falls the proof of the existence of a Deity. ... should Physiology ever succeed in reducing the facts of intelligence to Phaenomena of matter, Philosophy would be subverted in the subversion of its three great objects, -- God, Free-Will, and Immortality.
>
> Sir William Hamilton, 1836[2]

I

In the year 1816, when Lawrence gave his controversial lectures in London, the end of the Napoleonic wars had brought Dr Johann Spurzheim (1776-1832) to Edinburgh to seek an audience for a new science of the mind known as phrenology. Educated in Austria, Spurzheim had been a pupil of Dr Franz Joseph Gall (1758-1828), and between 1800 and 1813, Spurzheim assisted Gall's research into cases of aphasia precipitated by brain injuries in battle, which led onto further research in neuroanatomy. In methodology and in his metaphysical assumption, Gall's approach to neuroanatomy differed from the traditionalists. Departing from the contemporary practice of brain dissection by successive slicing, Gall pioneered the method of following the contours of what he took to be the brain's structural organization as

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[1] George Combe, *Outlines of Phrenology* (1824, Edinburgh, 9th edn. 1854), 32.

[2] William Hamilton, *Lectures on Metaphysics* (Edinburgh, 1859), Lecture II, first delivered, Session 1836-7, 32-33 &37.

manifested in its anatomy. In his metaphysics, Gall dismissed the traditional approach to the mind-body problem, which viewed the soul or mind as an independent principle, acting purely by itself, and capable of producing the faculties and propensities. Instead, Gall's research was guided by the belief that 'the faculties and propensities of man have their seat in the brain'.[3] Through neuroanatomy, Gall set out to establish the link between the physical brain and mental functions. He further postulated that knowledge of brain physiology would lead to better understanding of human behaviour, and remove the abstractions and speculations surrounding the philosophy of the mind. In other words, Gall's aim was 'that psychology should cease to be the domain of the speculative philosopher and should become the special study of the naturalist and physiologist'.[4] By his own admission, the object of Gall's research was 'to found a doctrine on the functions of the brain. The result of this doctrine ought to be the development of a perfect knowledge of human nature'.[5]

This doctrine came to be known as organology or craniology, and central to this doctrine was the insistence of linking brain anatomy with psychology. In summary, the chief tenets of craniology were: (1) that the brain is the organ of the mind, and is an aggregate of mental organs (not a homogeneous unity); (2) that these mental organs are topographically localized into specific functions; (3) that other factors being equal, the relative size of any one of the mental organs can be taken as an index to that organ's power of manifestation; and (4) that since the skull ossifies over the brain during infant development, external craniological means can be used to diagnose the internal state of mental faculties. While such a summary facilitates discussion of the new science of the mind, it has to be read in the context that there existed nuanced differences between Gall and his followers. Robert Young's account of the development of Gall's doctrine into craniology and then further into phrenology by Gall's different followers admirably highlights the twists and turns of such a process; and serves as the caveat to any attempt at a summary.[6]

Young's assessment of Gall's work was that 'his was the first empirical

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[3] Quoting Gall, in Robert Young, *Mind, Brain, and Adaptation in the Nineteenth Century* (Oxford, 1990), 20.

[4] Young, *op. cit.*, 16.

[5] Franz Gall, *A Biographical History of Philosophy*, tr. George H. Lewes, 4 vols. (London, 1857), I:55; quoted in Young, *op. cit.*, 12.

[6] See Young, *op. cit.*, 9-53.

approach both to the nature of the faculties and to their localizations'.[7] By cerebral localization, Young refers to Gall's doctrine that the various parts of the brain have relatively distinct mental, behavioural, and/or physiological functions. Even Pierre Flourens, Gall's most effective critic, remarked on Gall's achievement in the following terms:

> the proposition that the brain is the exclusive seat of the soul is not a new proposition, and hence does not originate with Gall....The merit of Gall, and it is by no means a slender merit, consists in having understood better than any of his predecessors the whole of its importance, and in having devoted himself to its demonstration. It existed in science before Gall appeared – it may be said to reign there ever since his appearance.[8]

Flourens' remark sets in context the relevance of Gall's doctrine to our current discussion. By pursuing the question, 'What are the functions of the brain?' Gall resolutely focused on the material organ rather than speculated on the nature of the mind. After Gall, the understanding of the manifestation of mental faculties took a decisive turn from philosophy into the domain of biological science. Though critical of Gall's detailed findings, George Lewes acknowledged Gall's place in his positivist *History of Philosophy*, as having 'rescued the problem of mental functions from metaphysics and made it one of biology'.[9] Based on Gall's craniology, Spurzheim developed the system of mental science came to be known as phrenology, derived from two Greek words, *Phrenos* meaning mind, and *Logos* meaning discourse. Distinction must be drawn, however, between craniology and phrenology and their respective scientific merits. Phrenology was an attempt to apply craniology to deduce important character traits by an examination of the shapes and sizes of the skulls. Such an application was originated by Spurzheim, not by Gall himself. Furthermore, while Gall's primary concern was to 'prove psychology depended on the structure of the brain', Spurzheim was intent on 'applying phrenology to problems of contemporary philosophy, religion, and social reform'.[10] Combe, as the arch-disciple of Spurzheim, extended and propagated phrenology further as a creed, in which the moral constitution of man was seen as manifested through his physical constitution, with special reference to his skull.

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[7] Robert Young, 'Gall', *Dictionary of Scientific Biography*, 16 vols. (New York, 1972), V:250-6,

[8] Quoted in Young, *op. cit.* (1990), 20.

[9] Young summarising Lewes in *Dictionary of Scientific Biography*, V: 255.

[10] See De Giustino, *Conquest of Mind* (London, 1975), 12-17.

When Spurzheim set foot in Edinburgh in 1816, the university city was unique in Europe for her twin reputation in medicine and metaphysics. It was a city where the study of the brain as an organ in medicine, and the reflection of the mind in philosophy, had equally contributed to the golden age of Scottish Enlightenment.[11] It was not surprising, therefore, that the reception of Spurzheim's lectures on the latest science on the brain should be so polarised. On the one hand, George Combe's conversion to phrenology in 1816 turned him into the most effective champion for the science, in Britain and America, for the ensuing four decades. On the other hand, the intelligentsia in Edinburgh who had been trained by her university in either medicine or metaphysics, or both, became the most effective critics of phrenology. It was in Edinburgh that the debates between the established science of the mind represented by the Scottish common-sense philosophers and the new science of the mind coming from phrenology were most intense and protracted.

'The Edinburgh Phrenology Debate: 1803-1828' formed the subject matter of an historiographical discussion between Cantor and Shapin (1975).[12] A comparatively internalist approach is adopted by Cantor to explain the 'incommensurability' of the two sciences of the mind. Meta-issues beyond the immediate subject matter of the controversy, related to methodology and theology for instance, are examined to understand the two systems of assumptions that give rise to the 'opposing' sciences of the mind. Shapin adopts an externalist approach to account for the allegiance to, and rejection of, phrenology in terms of socio-political, and religious factors. De Giustino's *Conquest of Mind* (1975) is a study of the interaction of phrenology with the social thought of the early Victorian period, in areas like religion and education.[13] Cooter's historical study of phrenology as a science that had reached the populace and influenced their attitudes is an attempt to reclaim a part of what he sees as that 'veritable wasteland' between 'the sociology of collective behaviour and the history of scientific ideas'.[14] This chapter is an attempt

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[11] See for instance, R. H. Campbell & Andrew Skinner (ed.), *The Origins and Nature of the Scottish Enlightenment* (Edinburgh, 1982); Anand Chitnis, *The Scottish Enlightenment – A Social History* (London, 1976); Richard Sher, *Church and University in the Scottish Enlightenment, The Moderate Literati of Edinburgh* (Edinburgh, 1985). Lisa Rosner, *Medical Education in the Age of Improvement, 1760-1826* (Edinburgh, 1991).

[12] Geoffrey Cantor & Steven Shapin, 'Phrenology in Early Nineteenth-Century Edinburgh: an Historiographical Discussion', a series of three articles, *Annals of Science*, 32 (1975), 195-256.

[13] David de Giustino, *Conquest of Mind* (London, 1975).

[14] Roger Cooter, *The Cultural Meaning of Popular Science* (Cambridge, 1984), 2.

in the similar direction, in that 'veritable wasteland' between the internalist and externalist approaches. It does not purport to enumerate all the differences between the two sciences of the mind. The primary interest of this chapter is to understand the contemporary objections raised against phrenology as a science of the mind by focusing on three events in Edinburgh. The first was the publishing event of three articles against craniology or phrenology by the *Edinburgh Review* in 1803, 1815 and 1826, respectively by the mental philosopher Thomas Brown, the physician Dr John Gordon, and the Whig politician and a founder of the *Review*, Francis Jeffrey. At each key stage of the development of the new science of the mind, the *Review* responded judiciously with its criticism. Referred to as the 'Koran of the reading public' by George Combe,[15] the articles served as landmarks in charting the reception of phrenology by the Edinburgh intelligentsia and of how the wider public might have been influenced in this respect.

The second event of focus centred on the debate between George Combe and Sir William Hamilton, the last Scottish common-sense philosopher of any note. From 1826, Hamilton was reckoned by the phrenologists in Edinburgh as the most formidable anti-phrenologist. The two representatives of the two sciences of the mind conducted a protracted debate on phrenology through correspondence and public lectures. The course of the debate between Combe and Hamilton will be discussed, and the arguments advanced by each side examined. In 1836, the Combe-Hamilton debate that had been ongoing for a decade received a public verdict in the form of a chair contest, which is the third event being discussed in this chapter. Combe and Hamilton were amongst the candidates for the contest of the Chair in Logic and Metaphysics at the University of Edinburgh. The contest became a test case as to whether phrenology as the new science of the mind would replace the traditional science of the mind represented by the Scottish common-sense philosophy. The perceived significance of the contest offered the public and the press an opportunity to debate the implications of conferring on phrenology the

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[15] The first issue of the *Edinburgh Review* appeared on 10 October 1802, and. was an instant success. Sales increased at a remarkable rate, reaching 2,500 copies in July, 1803; 9,000 in 1808; to nearly 13,000 copies in 1814. Periodicals in this period were typically under the influence of the publishers; the success of the *Review* might have owed much to its independence from a publisher, and the handsome payment made to its contributors guaranteed to attract the best of talents. The first publisher, Constable, agreed to pay ten guineas a sheet, which was 'three times what was ever paid before for such work'. (Cockburn, *Journal*, ii, 74). The minimum was soon raised to sixteen guineas a sheet, and the average was between twenty to twenty-five guineas during Francis Jeffrey's editorship.

respectability of a university discipline. It is argued here that the religious and moral implications of the phrenological doctrine ranked as the chief consideration in assessing the respectability of phrenology.

II

Long before Spurzheim set foot in Edinburgh in 1816 to preach phrenology to the Scots, the *Edinburgh Review* was aware of the significance of Gall's system of craniology to the extent that the journal, in its second year of circulation, devoted an article to discuss the subject in April 1803.[16] Its author, Thomas Brown (1778-1820) was then a medical student completing his M.D., but whose interest in mental philosophy had led him to read Dugald Stewart's *Elements of the Philosophy of the Human Mind* in 1793, and to attend Stewart's lectures at the University of Edinburgh the following winter. In 1796, Brown joined the Literary Society whose members included Brougham, Jeffrey, Horner, Sydney, Leyden, bringing together the future founders of the *Edinburgh Review*. In 1798, Brown published *Observations on the Zoonomia of Erasmus Darwin*, which received high acclaim and earned him a reputation in the Edinburgh literary circle. With that reputation and being a close associate of the founders of the *Edinburgh Review*, Brown became one of its earliest contributors. Brown's *Review* article on Gall was a response to Charles Villers' published letter to George Cuvier on Gall's doctrines. Though later on in his life, Brown had expressed views which led Hamilton to charge him of 'infidelity' to the Scottish school, at the time of writing the *Review* article, Brown was perceived as a protégé of the common-sense school. Indeed, when Stewart retired in 1810 from the chair of Moral Philosophy at Edinburgh, Brown succeeded him and held the chair until his death in 1820. In assessing Brown's suitability as an assessor of craniology, it should be noted that as a medical student, he would have studied the brain as an organ, and as a mental philosopher, the mind had been his 'object' of reflection.

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[16] An earlier notice of craniology was by John Yelloly, M.D., in the *Monthly Review* in 1802, which dismissed the science as 'visionary'. Before 1820 phrenology was regarded with disdain in the *Edinburgh Medical and Surgical Journal*; *London Medical Repository, British Critic, Monthly Criticial Gazette, Critical Journal; Literary Journal* and the *Monthly, Quarterly, Augustan, Eclectic, and Edinburgh* reviews; the *Gentleman's, New Monthly*, and *Blackwood* magazines; and the *Literary Gazette*, to mention only the most widely circulated. See Cooter, *op. cit.*, 22-3.

Brown's article introduced Gall and his system with humour and also testified to the fact that Gall's craniology was not well known in Edinburgh in 1803. 'Of [Gall's] system, we till now [had] known little more, than that it terrified the stout hearts of an Emperor [of Austria] and his Council, whom many years of unsuccessful war had not been able to dismay'.[17] Speaking of the Emperor's measure of issuing an edict to exile Gall, Brown stated that he could not see why the Emperor's 'regard took such violent alarm', for he did not see the charge of materialism as relevant. 'If the tendency to Materialism be all which was dreaded, [craniology] seemed to have no more tendency to it, than any other theory of the brain, which [had] been taught for ages, without the least fear of penalties of the royal edicts'. Brown summarised that for all the theories of mind, there could be two opinions only. The first was 'pure immaterialism', which asserted that all mental functions take place immediately by the energies of the mind without the intervention of any material organ. The only alternative position was to assert the necessity of a material organ. If one were to adopt the alternative, then any modification of it which did not exclude the mind 'as the ultimate percipient, must have an equal tendency to materialism'. To Brown, the position was essentially the same whether '*the whole brain* be the organ, or *a part of the brain* be the organ, or different parts be organs of *different functions*'. He went on to point out the inconsistency of the position of the immaterialist who believes:

> ... that it is the soul which sees, the soul which hears, as much as that it is the soul which judges, and the soul which imagines; and, since he does not condemn, as impious, the allotment of different organs of sight and hearing, what greater heresy is there, in the allotment of different parts of the sensorium, as the organs of judgement and imagination?[18]

To Brown, to allow organs to affect sight and hearing but not other mental functions like judgement and imagination was inconsistent. Significantly, Brown had set out to dismiss the significance of the charge of materialism levelled against Gall's system of craniology.[19]

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[17] [Thomas Brown], 'A letter from Charles Villers to Georges Cuvier, ... on a New Theory of the Brain, as the immediate organ of the intellectual and moral faculties, by Dr Gall of Vienna, Metz, 1802', *Edinburgh Review*, 2 (1803), 147-160, 147.

[18] Ibid., 148.

[19] Cooter points out that Brown, unlike most subsequent anti-phrenologists, had a strong attachment to the ideas of certain French materialists. 'Brown is sometimes accredited with being a republican and is generally regarded as the last representative of a vigorous Scottish school that was modified by French influence but unaffected by German idealism. ... It is Brown's attachment to these views that

Brown's criticism of Gall's system was more on physiological grounds, namely, 'that the arguments, adduced in support of the separate localities of thought, [were] not very convincing'.[20] In this respect, the focus of Brown's article was to disprove Gall's claim that the brain was the aggregate of different mental organs. For instance, Gall argued that the sense of relief experienced by a mental organ from a change of subject after long study was a proof that different parts of the brain were employed for different subjects of study. Brown gave a counter-example to testify that relief could be experienced by the same organ in response to a change to external stimulus; the same eye, fatigued with gazing on one species of light, would find tremendous relief from a mere change of colour. The sense of relief experienced due to a change in external stimulus was, to Brown, not a conclusive proof that different organs were employed.

As a proof that different mental faculties had different localities within the brain, Gall adduced from the fact that diseases, madness or external injuries of the brain would lead to the *partial* loss of mental power peculiar to one faculty, while other faculties remained unimpaired. Gall's argument was that this was a proof that the affectation was localised to one organ. Contrary to Gall, Brown pointed out that partial loss within the *same* faculty was more frequent than not. For example, there were numerous cases of persons losing memory of one language while retaining fully that of another; or of memory of a particular period of one's life being obliterated while other periods remained unimpaired. For Brown, this implied that the same part of the brain was healthy and diseased at the same time, which was clearly contradictory.

The third argument adduced by Gall was the various degrees of power manifested by different faculties within the same person as a proof that different organs governed the manifestation of different faculties. Brown contended that if a mathematician had no poetic taste, it was because the perception of the relations of mathematical ideas formed one series of affections, while the perception of the beauties of poetry formed another. Brown maintained that the two series could

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explains the paradox of British phrenologists later coming to regard him as their philosophical forerunner.... But it is doubtful if Edinburgh phrenologists would ever have claimed Brown "a phrenologist in disguise" had not Brown's biographer, David Welsh, been an Edinburgh Phrenological Society member.' See Cooter, *The Cultural Meaning of Popular Science*, (Cambridge,1984), footnote 31, 308.

[20] Brown, *op. cit.*,151; italics mine.

belong to the same organ, as in muscular motions where two different series were necessary in two different mechanical arts, that of contraction and extension.

The fourth argument Brown tried to refute concerned the varying degrees whereby different faculties seemed to be affected by the state of sleep. Gall considered somnambulism (a less extensive sleep) as proof of the brain being the aggregate of different organs. Brown disagreed with the validity of the proof. For the purpose of our current discussion, it is important to notice that Brown's chief objection against Gall's doctrine was *not* that the brain was the organ of the mind, but that the brain was an *aggregate* of mental organs. Brown's standpoint could be summarised as:

> To us, however, the circumstances, in which the faculties are exercised, seem to shew sufficiently, that they are not the energies of different parts. Thus, if perception and memory result from affections of certain organs, and imagination from the affections of another organ, ... *we cannot conceive* the imagination to act, without including in itself those ideas which are said to be the states of unconnected parts.[21]

In other words, the brain as the organ of the mind functioned as *a unity* in Brown's opinion. That the brain should function as the aggregate of different organs was simply inconceivable for Brown. He extrapolated what was to him an absurd situation, in which 'the mind should be capable of completely believing, and, at the same moment, completely disbelieving the same proposition', if the brain were to function as the aggregate of different organs. In the final analysis, Brown's chief objection to Gall's system was *not* materialism – it did not concern the claim that the brain was the organ of the mind. Brown was contending against the claim that the brain should be an *aggregate* of mental organs. In this respect, the counter-arguments by Brown seemed to be advanced from a physiological point of view, but it is important to note that the conception of the mind *functioning as a unity* at any one time was a foundational premise of the common-sense philosophy.[22] The metaphysics that instructed Brown in his analysis of his medical evidence appeared to be that of the common-sense philosophy.

Another tenet in craniology that Brown disputed, at lesser length, concerned the claim that the difference of power manifested by different faculties was

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[21] Brown, *op. cit.*, 154-155; author's italics.

[22] See D.R. Brookes, R. Derek (ed.), *Thomas Reid, An Inquiry into the Human Mind, on the Principles of Common Sense* (Edinburgh, 1997).

correlated to the *quantity* of the parts of the brain. This objection was reiterated by Dr John Gordon, M.D. (1786-1818), in his article in the *Edinburgh Review* published in 1815. As a fellow of the Edinburgh Royal Society and the College of Surgeons and a popular lecturer in anatomy and physiology at the University of Edinburgh, Gordon's standing as a medical professional was indisputable. The article was occasioned by the publication of Spurzheim's *The Physiognomical System of Drs Gall and Spurzheim* in the same year.[23] Though the title referred to both Gall and Spurzheim, it was not to be assumed that Gall would have agreed to all that was published by Spurzheim in this work. Gordon stated in the article that Spurzheim had enlarged and amended the doctrine of Gall to such an extent that a certain schism already existed between the master and the pupil. As regards the merit of Gordon's article as a commentary on the new science, the *Christian Pioneer* in April 1835 alluded to Gordon's article as 'the most virulent attack' launched against Gall and Spurzheim:

> 'The *Quarterly*, the *Eclectic*, the *British*, the *Critical*, the *Monthly* Reviews, with the *London Medical Repository*, and the *British Critic*, all exerted their powers of ridicule, argument and abuse; but the most virulent attack of all was that of the late Dr.John Gordon in the 49th number of the *Edinburgh Review*.[24]

Writing in 1836, Hewett Watson in his *Statistics of Phrenology* referred to the fiat of the *Edinburgh (and Quarterly) Reviews* as being 'held decisive by a large portion of the public, fifteen or twenty years ago'. Gordon's article published in the *Review*, which was 'then so powerful and influential', was to give 'a signal for every petty witling and self-sufficient railer to join in the hue-and-cry raised against the doctrines of Gall and Spurzheim'.[25]

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[23] [John Gordon], 'The Doctrines of Gall and Spurzheim', *Edinburgh Review* 25 (June 1815), 227-68. Gordon had already established his standpoint in another *Review* article, 'Functions of the Nervous System', *Edinburgh Review*, 24 (Feb, 1815), 439-52. His book, *A System of Human Anatomy*, (Edinburgh, 1815), contained a detailed account of his objections against Gall and Spurzheim's system on anatomical grounds, see especially pages 79-174. *The Physiognomical System of Drs Gall and Spurzheim* was translated from French of *Anatomie et Physiologie du Systeme Nerveux en general*, first published, 1810.

[24] Hewett Watson, *Statistics of Phrenology*, (Edinburgh, 1836), 17. Watson (1804-1881) gave up law to study medicine in Edinburgh; introduced to phrenology when in Liverpool c. 1823 and became an ardent follower after meeting Combe; assumed editorship of the ailing *Phrenological Journal* 1837-41; turned away from phrenology c.1840 and devoted time to study botany and evolution. Scientific publications like *Progress of the Earth's Changes* (1837), and *Theory of Progressive Development* (1845) were accounts of his developing theories on botanical evolution.

[25] Ibid., 17.

So, what message did Gordon give out to the reading public through the powerful medium of the *Edinburgh Review*? Writing in the immediate wake of the Napoleonic wars when Francophobia was still strong, to decry the new science as a breed of the French atheistic materialism which was feared as having led the French to revolution and wars would have been consistent with the national mood. Significantly, however, Gordon did not address the subversive hues of the materialistic doctrine proposed by Gall and Spurzheim.

Gordon's scientific objections are not what most secondary sources focus on. The language he employed to introduce and conclude his article, vehement, and at times sardonic, seems to attract more attention from his posthumous reviewers that the subject matter of his review. Right from the outset, Gordon declared 'the whole doctrines taught by these two peripatetics, anatomical, physiological, and physiognomical[26] as a piece of *thorough quackery* from beginning to end'.[27] From 1805, Gall and Spurzheim undertook extended tours of the intellectual centres in Germany, Switzerland, Holland and Denmark to propagate the new science of the mind, until they arrived in Paris in November 1807; and parted company. The terms 'peripatetics' and 'Doctors' used by Gordon conveyed his professional disdain towards Gall and Spurzheim, which was rendered explicit in his concluding comment:

> The writings ... consist of such a mixture of gross errors, extravagant absurdities, downright mistatements, and unmeaning quotations from Scripture, as can leave no doubt, we apprehend, in the minds of honest and intelligent men, as to the real ignorance, the real hypocrisy, and the real empiricism of the authors.[28]

Aside from these flamboyant remarks, the importance of Gordon's article has to be viewed as a creditable and representative specimen of how the new science of the mind was interpreted by a medical professional at the end of the Napoleonic era. By examining the two chief objections raised by Gordon, some aspects of the incompatibility between the predominant beliefs of the mind and the new science of the mind can be understood.

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[26] Physiognomy was another branch of brain science being developed by Gall's contemporary, the Swiss priest Johan Caspar Lavater (1741-1801). Lavater's work was independent of Gall, and against Lavater's intention, physiognomy became associated with the practice of correlating aspects of human nature with facial signs.

[27] Gordon, *op. cit.* 227.

[28] Ibid., 268.

The first objection concerned the '*irrestible* conclusion' one was to reach after reading *Physiognomical System* that 'all functions or faculties of man, whether those of his *automatic* or of his *animal life*, [were] innate and determinate'[29]. All faculties of automatic life were innate because they were the effects of organization.[30] Man was born organized, with flesh and blood, skin and bone; the faculties governing the automatic (or organic) life of man were therefore innate and determinate. 'Innate and determinate' in the sense that one was born with them, and had no choice whether to have or not to have these faculties. In respect of automatic life, therefore, man was no different from other lower animals or plants.

Gordon went on to relate the second category of faculties concerned animal life, and were sub-divided into four orders in *The Physiognomical System*, namely, (1) voluntary motion, (2) the five external senses, (3) propensities and sentiments, and (4) understanding. In determining whether these faculties were innate, Gall and Spurzheim reputedly seemed to rely heavily on the similarities between man and the animals. Concerning the first two orders of faculties, Gordon accepted that they were innate, the reason being: 'Voluntary motion [was] possessed by man in common with the lower animals; and the five senses [were] likewise inherent in the nature of both; *therefore*, they [were] obviously given by nature, or innate.' However, as regards propensities and sentiments and understanding, Gall and Spurzheim allegedly stated that these functions were not *caused* by external influences; to wit even these faculties were determinate and innate. Hence, man was a social being like hogs, geese and crows; he was endowed with faculties destined for society; and *consequently*, society was not the cause of his faculties. Similarly *education* was not the cause of the intellectual faculties; for every kind of animal always preserved its own nature, and individuals of the same kind often excel each other. Examples of animals like 'M. Dupont's cow', which alone understood how to open the enclosure of a field while his companions failed to imitate his action, were cited to illustrate the stance that understanding was innate. Spurzheim cited

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[29] Ibid., All italics, unless stated otherwise, are the author's.

[30] 'Organization' was used in the article without further definition. The term was prevalent in any discussion on 'matter' in the early 19th century, which centred on whether matter was inert, or endowed with properties, or that properties emerged from the peculiar ways that matter was arranged. 'Organization' carried many connotations, but its basic reference concerned the arrangement of matter. A contemporary definition for 'organization' was 'the peculiar composition, which distinguishes living bodies; in this point of view, they are contrasted with inorganic, inert, or dead bodies', from William Lawrence, *An Introduction to Comparative Anatomy and Physiology*, (London, 1816), 120. See also chapter three, section iii, of this thesis.

numerous biblical verses to assert the point that 'the religion of Christ, also admits the innateness of the faculties', which were no fewer than thirty-three.[31] Reading between the lines, Gordon probably would accept the innateness of the *automatic* or *organic* life, but not the innateness of the faculties that *govern* the so-called *animal* life. Though Gordon did not clearly state the reasons for his objection, the deterministic implication of such a doctrine might be Gordon's chief obstacle. In this respect, Gordon quoted in full Spurzheim's own 'recapitulation' of his *system of morals* as the best indictment of the inconsistency of the new science and its moral claims.

> I have ascertained that our doctrine does not lead to fatalism. I have stated, that, according to a general law throughout all nature, inferior laws are subordinate to superior ones; that, therefore, the faculties proper to man ought to govern the other faculties common to man and animals; that, for this reason, man must be free; that liberty begins with understanding, and requires will, motives, and the influence of the will upon the actions; that motives are of two kinds; that the faculties proper to man procure moral motives; and that, therefore, man alone has moral liberty.[32]

Gordon's only ironic remark to the passage was that it was 'so clear and so unanswerable, that it would be a shame to embarrass it with any comment'. Against Gordon's exposition of Spurzheim's doctrine which claimed all mental faculties were innate, Spurzheim's assertion that his doctrine did not therefore lead to moral fatalism would indeed appear 'unanswerable' to the *Review* readers. Perhaps in Spurzheim's mind, to assert that mental faculties were not *caused* by external circumstances still left him room for asserting that mental faculties could be *'influenced'* or *'improved'* by external circumstances; in that 'cause' was not the same as 'influence'. Even if such was the case, the nuances between 'cause' and 'influence' were not something Gordon dwelt on. To Gordon, if all mental faculties were innate and not *caused* by external circumstances, whether it was society, education, or climate, then that, in itself, was enough to render the doctrine fatalistic.

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[31] For example, 'A man can receive nothing except it be given to him from Heaven' John iii 27. 'Who has ears to hear, let him hear' Matt xiii 9. 'St Paul says, "When the Gentiles which have not the law, do by nature the things contained in the law, these, having not the law, are a law unto themselves ..."'Rom ii 14. Gordon listed all the thirty-three faculties governing the animal life in Spurzheim's system; eighteen of which were propensities; fifteen of which related to the intellect. As quoted by Gordon, *op. cit.*, 233-239. See also Graham Richards, *Mental Machinery: The Origins and Consequences of Psychological Ideas, Part I: 1600-1850* (London: Athlone Press, 1992), p. 263, where he points to the similarities between Gall's and Spurzheim's classification of the mental faculties and those of Reid and Stewart.

[32] Spurzheim, *The Physiognomical System*, 523; quoted in Gordon, *op. cit.*, 240.

The second chief objection from Gordon concerned Spurzheim's claim that the brain was exclusively the organ of feelings and the intellectual faculties. Contrary to the metaphysics of the Scottish common-sense school, Gall and Spurzheim declared in the first place that their inquiry was *not* into the *nature*, but the *manifestations*, of the faculties of the mind. Their motto was that the mental faculties could only be understood by their manifestations, not by reflecting on their nature. Secondly, Gall and Spurzheim maintained that there could be no *manifestations* without *organization*. In other words, the manifestation of each mental faculty could be correlated to an organ; and all manifestations of the mind depended on *organization*. Their final words on this subject were that 'the brain was exclusively the organ of all feelings and intellectual faculties'.

Gordon devoted some eight pages of his article to refute the claim that the brain was the organ of the mind. His comments against the arguments cited by Spurzheim to support a corporeal organ for the mind would suggest that Gordon's conception of the mind was of the Cartesian model, that the mind was an immaterial entity, quite independent of any bodily parts. Their views can be sampled as follows:

> Spurzheim: The manifestations of the mind are modified in every individual.
>
> Gordon: Is it probable that the soul of each individual differs? No; *it is said* that all mankind have descended from the same original parents.
>
> Spurzheim: The faculties of mind may be exercised and trained.
>
> Gordon: but how can an *immaterial* being be exercised?
>
> Spurzheim: Every one feels that he thinks by means of the brain.
>
> Gordon: We solemnly declare, that we, for our parts, have never yet known what it is to *feel that we think by means of our brains.* [33]

The notion that mind was an immaterial entity independent of a bodily organ was a long-standing belief in western culture. The Cartesian model of mind-brain duality which underpinned the immateriality of the mind was like an innate concept, not only for the general public, but even for a sophisticatedly trained medical professional like Gordon. Against the claim that the brain was the organ of intellect, Gordon argued:

> The *organ* of intellect may reside in some other part of the nervous system, or in some other region of the body; and that part or region

[33] Gordon, *op. cit.*, extracts of views from 241,243,245; author's italics.

> may be continually receiving from the brain a supply of something necessary to the healthy discharge of its functions; ...[34]

Regarding the seat of sensation, Gordon countered that 'it might as well be argued that all sensation depended ultimately on some change of condition in the heart'.[35] Gordon's position was that the mind was an immaterial entity that could not be bound up with a specific bodily part or organ.

Spurzheim's claim that no manifestations of the mind would have been possible without the organ of the brain was not just a challenge, it was almost an affront to Gordon, as testified by the vehement condemnations of the work sprinkled throughout the article. The nature of the affront was perhaps summed up in the following indictment of the *Physiognomical System* in the article:

> Such is the trash, the despicable trumpery, which two men calling themselves scientific inquirers, have the impudence gravely to present to the physiologists of the nineteenth century, as specimens of reasoning and induction.[36]

It was not merely the affront felt by an individual towards what was to him, an insane demand to take cognizance of such an alien concept concerning the mind. It was the outrage of a scientific man towards his fellow practitioners whose work he judged as unworthy of the practice of science. As a lecturer of anatomy at the University of Edinburgh, Gordon's comments on the *Anatomical Discoveries of Drs Gall and Spurzheim* were demonstrative of his indignation towards his fellow practitioners in this department of knowledge.

> These gentlemen [Gall and Spurzheim] are too knowing not to have perceived, that the science of anatomy is in general cultivated with most zeal, by those who have the least leisure to devote to it; that is, by persons who are toiling with weariness through medical practice; ... They calculated, no doubt, that as the number of individuals is inconsiderable, ...the chance that a few bold affirmations respecting the structure of a delicate and complicated organ would be put to the test of experiment, was proportionally small.[37]

The most obvious anti-French allusion in the article was in respect of the Institute of France, which in Gordon's mind, had failed to uphold the standards for science. It was 'with surprise and regret', Gordon observed 'how easy it had become in late

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[34] Ibid., 245.

[35] Ibid., 245.

[36] Ibid., 250; the reference to the nineteenth century was used to hint at the fact that Gall's system was firmly an invention of the eighteenth century.

[37] Ibid., 254.

years, to obtain the good opinion, in all physiological matters, of that strange association of talents and obsequiousness', called the Institute of France.[38]

In summary, Gordon's article has to be appreciated as first and foremost an attempt to address the scientific issues of Spurzheim's theory of the mind.[39] Gordon's chief objections were against the following two positions: (1) that all mental faculties were innate, and (2) that the brain was the organ of all intellect and sensation. Gordon's style and language, to a certain extent, might have compromised and distracted from the scientific merits of his article for readers who expect dispassionate objectivity from any scientific commentators. However, if the language employed could be understood in context, as an expression of the outrage against a fellow practitioner, then that should aid our understanding of how passionately people two centuries ago felt about being challenged to re-consider the concept of an immaterial mind.

After Gordon's article, the next major *Edinburgh Review* article devoted to the discussion of phrenology came from Francis Jeffrey (1773-1850). Brown's 1803 article addressed Gall's craniology; Gordon's 1815 article was directed at Spurzheim's *Physiognomical System*; while Jeffrey's 1826 article was aimed at Combe's *A System of Phrenology*. Published in 1825, the *System* went into a second edition by October. 'This erudite and massive system of 566 closely printed pages', as Jeffrey called it, was reviewed in a lengthy article of sixty-six pages. Intended to stop Edinburgh from being 'the great nursing mother' of phrenology, Jeffrey's article seemed to have the contrary effect by giving a new impetus to local interest in the science. A public debate followed between Combe and Jeffrey, whereby Combe answered Jeffrey's September article. Jeffrey replied in the 89th issue of the *Review* in December 1826, to which Combe responded in February 1827, again in the *Phrenological Journal*.[40]

Trained in the law, Jeffrey was admitted to the bar in 1794. His progress in the legal profession was slow to begin with, which gave him leave and the need to

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[38] Ibid., 254.

[39] Gordon addressed other interesting issues regarding the brain not discussed in this chapter. For instance, that the brain is an aggregate of many organs, that the energy or perfection of each faculty is proportional to the size of its organ; and a lengthy discussion on the White and Brown Matter of the brain and their converging and diverging fibres.

[40] Combe's first response to Jeffrey occasioned by the *Review* articles were published under separate cover as 'Letter from George Combe to Francis Jeffrey, Esq. In Answer to His Criticism on Phrenology', *Edinburgh Review*, 44 (1826):

start his venture with the *Edinburgh Review*. Jeffrey and his co-founders like Henry Brougham and Francis Horner were all committed to the whig cause, and the *Review* was founded as a liberal journal – a counterweight to the conservative *Quarterly Review*. Jeffrey's long editorship of the *Review* only came to an end with his election as dean of the Faculty of Advocates in 1829, followed by his appointment as the Lord Advocate in 1830. Archibald Alison, a close friend of Jeffrey from youth, spoke of him as 'judicious and candid in criticism, and lenient and considerate in judgment, but [with] scarcely an original thought or profound reflection in his mind'.[41] When the boys first met, Alison was barely thirteen, and his assessment of the youthful Jeffrey might have been premature. Nonetheless it was an apt critique of Jeffrey's performance in his 1826 article. Jeffrey's lenient and considerate judgment of Combe was evidenced by his opening statements to the article:

> This [*A System of Phrenology*] is a long, sober, argumentative exposition of a very fantastical, and, in our humble judgment, most absurd hypothesis. The author, however, is undoubtedly a man of talent as well as industry; ... it is impossible not to admire the dexterity with which he has occasionally evaded the weak, and improved the plausible parts of his argument – and the skill and perseverance he has employed in working up his scanty and intractable materials into a semblance of strength and consistency.[42]

Unlike Gordon, whose outrage against Spurzheim's science left him no scope for any judicious comments, Jeffrey was able to allow the achievement of Combe, summed up in his assessment that 'Phrenology, in [Combe's] hands, had assumed, for the first time, an aspect not absolutely ludicrous'.[43] The objections against phrenology raised by Jeffrey also concurred with Alison's assessment that Jeffrey was not gifted for original thought. In many ways, Jeffrey rehearsed the arguments of Brown's and Gordon's, albeit without the philosophical depth of the former, and the technical command of the latter. Still, the significance of Jeffrey's opinions came from the potential influence on the ten-thousand strong readership of the *Review*. Furthermore, his opinions represented effectively the class Jeffrey typified – the

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[41] Archibald Alison & Jane R Alison, *Some Account of My Life and Writings, An Autobiography*, (Edinburgh, 1883), vol. 1: 34; quoted in Mary Cosh, *Edinburgh, The Golden Age*, (Edinburgh, 2003), 139.

[42] [Francis Jeffrey], 'Review of *A System of Phrenology*, by George Combe', *Edinburgh Review*, 44(1826), 253-318, 253.

[43] Ibid., 253.

upper-middle-class professional intelligentsia with a liberal political leaning during the Golden Age of Edinburgh's civic life.[44]

The chief difficulty Jeffrey had with phrenology was to conceive the brain as the organ of the mind. His position was well summed up as:

> The truth, ... is, that there is not the smallest reason for supposing that the mind ever operates through the agency of any material organs, except in its perception of material objects, or in the spontaneous movements of the body which it inhabits;...[45]

Throughout the article, Jeffrey laboured over the point that the only organs related to the mental faculties of which we had any knowledge were *exclusively* organs of external perceptions. There remained 'no proof that the mind, when it [was] not percipient of matter, act[ed] or [was] affected by material organs of any sort'. In Jeffrey's opinion, if the mind was related to some material organs, there was 'certainly no proof that those organs [were] in the brain, any more than in the heart or the lungs'.[46] Jeffrey granted that certain actions of the brain were necessary in maintaining the vitality of the mind; but he argued that in this respect, the brain was not different from other material organs like the heart or the lungs, which were equally essential in maintaining the vitality of the mind. To Jeffrey, it was inconceivable how the brain could be the organ of the mind, any more than the heart or the lungs. In a matter-of-fact manner, Jeffrey stated that, 'it [was] very true, that in our present state of existence, the mind [was] united, in some mysterious way, to a living and organized body'.[47] Furthermore, Jeffrey asserted that while for some people it was 'natural, and perhaps *necessary*, to suppose that there should be *material organs* to connect the mind with *material objects*', for him 'there was plainly no such probability or necessity'.[48] In other words, for Jeffrey, the mind was an immaterial entity that could assert its agency without necessarily being connected with any material organs. In saying so, Jeffrey unwittingly went against Brown's arguments.

If Jeffrey found it difficult to conceive the mind as connected with the material organ of the brain, it was equally, if not more difficult, to conceive of the

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[44] Reference to Mary Cosh's *Edinburgh, The Golden Age*; the title designates the period of civic and cultural life in Edinburgh from 1760 to 1832.

[45] Jeffrey, *op. cit.*, 257.

[46] Ibid., 257.

[47] Ibid., 257.

[48] Ibid., 269.

mind being divided into different faculties, each with its own physical locality within the brain. Arguing against the employment of the term *faculties* to denote the different activities that the mind could engage in, Jeffrey maintained that what were called 'faculties of the mind, we would consider as different *acts*, or rather *states* of it'. Such an assertion would be consistent with the conviction that the mind was an immaterial entity, for only matter was capable of being divided. If the mind was not composed of matter, it could not possibly be divisible. Unequivocally, Jeffrey stated:

> The mind, we take it, is one and indivisible: -- and if, by faculties, is meant parts, portions or members, by the aggregation of which the mind is made up, we must not only deny their existence, but confess that we have no great favour for a term which tends naturally to familiarise us with such an assumption.[49]

Jeffrey therefore considered the mind as one indivisible immaterial unity, connected to the living body in some mysterious manner. Jeffrey's position betrayed the adoption of the Cartesian mind-brain duality, all the more significant because it was not even a conscious choice that Jeffrey felt a need to justify -- it was a default position that he felt he could take for granted. Writing in 1826, Jeffrey denied the claims of phrenology on the basis that they were incompatible with the default position that he, and presumably many of his readers, still held as unassailably true. Speaking more as a lenient judge than a fierce opponent, Jeffrey's judicious concluding comments on phrenology were:

> We have no objections to Phrenology, as an amusement for idle people, and as a means, perhaps, of tempting them into a taste of reflection; and to those good ends this free exposition of its fallacy is likely ... to contribute. ...[Phrenology] would no doubt have declined of itself in no very long time.[50]

Significantly, Jeffrey did not denounce phrenology as a materialistic doctrine that would undermine religious beliefs, or dwell on the moral fatalism to which the doctrine could lead. On the contrary, Jeffrey was able to see the 'good ends' to which phrenology might lead, despite its 'fallacy'.

Brown, Gordon and Jeffrey had in the main argued against craniology or phrenology on physiological grounds. With various minor differences, the three reviewers had argued in the main that the mind was an *indivisible unity* that could not be reduced to an aggregate of cerebral organs constituting the brain. Brown cleared

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[49] Ibid., 261.

[50] Ibid., 318.

Gall's doctrine of materialism because he did *not* object to the brain being the organ of the mind. Brown's chief objection was that the brain should be an *aggregate* of mental organs, because in his view, the mind was *indivisible* in its manifestation. Gordon defended the mind not only as an *indivisible* unity, but as an *immaterial* entity that could not be bound up with a specific bodily part or organ. Jeffrey's review has less technical command but represented best the layman's point of view: that there remained 'no proof that the mind, when it is *not percipient of matter*, acts or is affected by material organs of any sort'.[51] His stance might also best represent that of the educated public – sceptical towards phrenology but not condemning. Gordon's review, the most robust, albeit vituperative, was the only one which objected to the philosophical conception of the mind as the brain for its moral implications as well. The stance taken by Gordon in denouncing phrenology for its metaphysical *and* moral implications, was pursued by Hamilton with forensic persistence. For Hamilton, nothing less than truth was at stake; and 'no one interested in the philosophy of man [could] be indifferent to an inquiry into the truth or falsehood of the new doctrine'. Jeffrey's predicted decline of phrenology did not come quickly; the decade after 1826 in fact witnessed the increasing popularity of phrenology. To Hamilton, the widespread support for phrenology rendered the doctrine impossible to be 'passed over with contempt', because it was 'maintained not only by too many, but by too able advocates, to be summarily rejected'.[52] Combe was certainly one of these able advocates, and the decade after Jeffrey's *Review* article was to witness the sustained debate between George Combe and William Hamilton over phrenology.

III

While Brown, Gordon and Jeffrey had written against the doctrines of Gall, Spurzheim, and Combe respectively, none of them had carried out the kind of observations and experiments as Hamilton had with his own hands, in order to disprove phrenology on its own grounds. Given that phrenology had professed to be founded on sensible facts, Hamilton maintained that 'sensible facts must be shown to

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[51] Ibid., 257; italics mine.

[52] Hamilton, *Lectures on Metaphysics* (Edinburgh, 1859), Appendix, 406.

be false, not by reasoning, but by experiment'.[53] For good reasons, Hamilton was recognised by the phrenologists from 1826 as the most formidable opponent. An anecdote according to Archdeacon Sinclair, who was invited to dine with Combe and Sir William Hamilton by a zealous phrenologist, gave some indication of Hamilton's standing as an anti-phrenologist. Speaking of the occasion, Sinclair's host related his hope:

> to have a great phrenological field-day, by securing an equal number of phrenologists and anti-phrenologists to back these two champions, ... You [Sinclair] must come to support Sir William. I can easily bring together as many well-informed phrenologists as I please ...; but I can hardly find a single anti-phrenologist who is not wholly ignorant on the subject.[54]

The year before the outbreak of the French Revolution saw the birth of Combe and Hamilton. While the two philosophers shared 1788 as their year of birth, their birthplaces were suggestive of the very divergent social environments in which they started their early lives. Hamilton was born in a house attached to the College of Glasgow, where Thomas Reid was still living in his old age. His grandfather and his father, both named Dr William Hamilton,[55] were Professor of Anatomy and Botany at the University of Glasgow in succession. In contrast, Combe's was humble and insalubrious, in a house adjacent to his father's small brewery situated beneath the steep bluffs supporting the Edinburgh Castle, then known as the Livingston Yards.[56] Hamilton was an embodiment of the Scottish intellectual aristocracy, while Combe personified the spirit of progress and self-improvement that characterised his age. In their choice of first profession, Combe and Hamilton converged in the law, and their social circles overlapped in their mid-life. In their twilight years, the social standing of Combe and Hamilton was not as far apart as at birth. Partly through sound investment, (as in the American railway) and partly with the added fortune of his wife, Cecilia Siddons, daughter of the celebrated actress Sarah Siddons, Combe was in fact financially more secure than Hamilton. In 1846, paralysed in limb and broken in health, Hamilton had to apply for a pension from the

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[53] Ibid.,, 407.

[54] Ibid., 115.

[55] Dr William Hamilton, born 31 July 1758, was apprenticed to William Hunter (brother of John Hunter) in London. The Hunter brothers' reputation would have assisted Hamilton in establishing a medical profession in London. However, he was even better connected in Glasgow, and at the age of twenty-three, he was nominated by the Crown to the Chair of Anatomy as his father's successor.

[56] See Gibbon, *op.cit.*, 2.

state, which offered an annual sum of £100, too demeaning for Hamilton to accept.[57] In contrast, Combe had more than one residence, could travel in comfort, accompanied by his wife and an entourage of a carriage and two servants.[58] Their careers and personal fortunes, in a sense, reflected the shifting alignments in Victorian society in which industrialisation and education were only two of the powerful forces that were moving ranks and fortunes.

Hamilton's more distant ancestors had been lairds, knights and baronets.[59] Such ancestry clearly inspired the young William Hamilton, to research into the family's genealogy from 1813-1816. The research enabled Hamilton to present a case to a jury before the Sheriff of Edinburgh in 1816, who adjudged him 'heir-male in general' to Sir Robert Hamilton of Preston (1650-1701). The effort undertaken to establish this claim was both laborious and expensive, but it could not be argued that any financial rewards could have been the motivation, for the estate had by then been separated from the family.[60] To rectify the landless title, the new Sir William, *Baronet of Preston and Fingalton*, purchased in 1819 the old tower of Preston and its surrounding ground. The zeal and devotion with which young Hamilton searched his family's ancestry was probably symptomatic of the man's reverence for the past, for traditions, for lineage, for which he styled himself a custodian. This trait was as emphatically expressed in his intellectual position, and in the way he defended the Scottish school of philosophy against phrenology.

The knowledge and authority Hamilton commanded as an anti-phrenologist came from the meticulous and extensive researches he conducted on the crania and the cerebella of man and animals. The experimental data amassed by Hamilton seemed to have outdone even those of the phrenologists. Speaking of his tables of data which extended to 'above 1000 brains of above 50 species of animals; accurately weighed by a delicate balance', Hamilton remarked that 'the phrenologists [had] not a single observation of any accuracy to which they [could] appeal'.[61] Of all the evidence gathered to disprove phrenology, Hamilton considered his observations

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[57] See Veitch, *Memoir of Sir William Hamilton* (Edinburgh, 1869), 285-293.

[58] See NLS MS7385, f.15, Combe to J. Adam, 28 September 1836, [draft letters].

[59] John Veitch, *Memoir*, 66-73, for the history of Hamilton's ancestors.

[60] Writing to his mother on 24 December, 1813, Hamilton spoke of working a good deal in the Register Office, describing it as a 'very laborious business, and ... very expensive – both of money and time'. For example, to make searches for thirty years about 1520, he had to look through some forty or fifty volumes of an old, close, difficult hand. Letter quoted in Veitch, *Memoir*, 68.

[61] Hamilton, *Lectures on Metaphysics* (Edinburgh, 1859), Appendix, 408.

on the frontal sinuses as the most conclusive of all. His findings on this subject were presented at the Royal Society in December 1826 under the title, 'Practical Consequences of the Theory of the Functions of the Brain of Dr Gall', followed by another paper in 1827.

The rules of the Society precluded any reply to the arguments thus advanced. Combe was keen to find a channel to answer Hamilton's argument. The opportunity arose when Hamilton proposed to deliver a popular lecture at the University of Edinburgh for the benefit of the distressed co-operatives. Combe wrote to solicit Hamilton's assistance to allow him to respond to his lecture to the same audience. According to the *College Minutes* of the University of Edinburgh dated 16 April 1827, a meeting was convened by the *Senatus Academicus* to consider Hamilton's proposal 'to give a lecture on Phrenology in the University, and a correspondence between Mr Combe and Sir William Hamilton arising from that advertisement'. The *Senatus* resolved to grant permission to Sir William Hamilton, 'to deliver the Demonstration on Phrenology advertised, but without its being considered in any way as a precedent,' but 'the request of Combe could not be complied with, he not being a member of the University'.[62] Before a crowded audience of supporters and opponents of phrenology, Hamilton read his two lectures on the subject. The lectures 'sparkled with fine irony, and abounded in facts which a goodly array of real skulls fully confirmed,' was the comment of one of those present.[63] For Combe's part, he had to resort to delivering his lecture, also for relief of the distressed co-operatives, in the Assembly Rooms at George Street. Some six hundred people attended, raising a considerable sum for the relief fund. Hamilton was present in this three-hour-long lecture, during which Combe tried to counter Hamilton's arguments against phrenology based on the existence of the frontal sinuses.

Frontal sinuses referred to the cavities between the tables of the frontal bone, which were situated at the forehead above the ridge of the eye sockets. As one commentator describes it, the existence of the frontal sinuses was to 'become the most treasured piece of evidence against the craniological part of the doctrine'

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[62] EUL, MSS College Minutes of the University of Edinburgh, first series, vol. IV, f.238, entry dated 16 April 1827. The special circumstance pertained to the cause to aid the distressed cooperatives. Hamilton's proposal seemed to have included Combe to deliver a correspondence address with him, which put Hamilton in a more charitable light than what Gibbon, Combe's biographer, would grant Hamilton. See Gibbon, *The Life of George Combe*, 2 vols.(London, 1878), I:191-193.

[63] Quoted in Veitch, *Memoir*, 115.

because it prevented 'all direct cranial reading in that region of the head of any supposed phrenological organ beneath'.[64] Hamilton asserted that the frontal sinuses existed in all adult crania, and were of 'variable and, (from without), wholly inappreciable extent and depth'.[65] The phrenologists claimed that the size, and therefore powers of the respective parts of a cerebellum, could be gauged by an examination of the cranium, on the basis that the contours of the skull mapped the contours of the brain it shelled. The significance of the frontal cavity was that since its extent and depth could not be gauged from without, it invalidated any claim of fair estimation of those parts of the cerebellum over which the cavity lay. Adding to the gravity of Hamilton's argument was the concentration of some of the smallest phrenological organs over the region of the sinus, casting doubt over phrenological observations of sixteen out of the thirty-three organs. For instance, like 'peas in a pod' six of the smallest phrenological organs of Form, Size, Weight, Colour, Order and Number lie side by side upon the eyebrows.[66]

Combe's predecessors had addressed the issue of the existence of frontal sinuses in different manners. Gall's defence was that even if the cavity did exist, given the plates of the frontal bone were parallel, it would not have affected the craniological observations. Hamilton's reply was that the cavity was only formed by 'divergence from parallelism'; and the non-parallel alignment of the plates of the bone was conceded even by the phrenologists. While Gall acknowledged the existence of the cavity, Spurzheim negated it altogether, claiming that the cavity occurred only amongst the elderly and the insane. After inspecting several hundreds of crania, Hamilton was confident to assert that '*no skull was without a sinus*'.[67] Furthermore, his data disproved the common belief that the cavity increased in extent with the advance of age. As for Combe, his defence was a combination of both Gall's and Spurzheim's views,

> ... while organs were found to differ in size to the extent of an inch and upwards, the departures from parallelism in the table of the skull did not in general exceed one-tenth or one-eighth of an inch; -- that in childhood the sinus did not exist; that after puberty it was generally present to a limited extent, so as to throw a difficulty in the way of observing the development of the organs of lower Individuality and

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[64] Cooter, *The Cultural Meaning of Popular Science* (Cambridge, 1984), 26.

[65] Hamilton, *Metaphysics*, Appendix, 411.

[66] Ibid., 411.

[67] Hamilton, *Metaphysics*, 412; author's italics.

> Size; and that in old age and disease, it was occasionally met with very large.[68]

In other words, Combe still maintained, though to a lesser extent than Gall, the parallelism of the tables of the frontal bone, and reiterated Spurzheim's defence in so far as the sinus did not exist in children, and was increased by age and disease.

After the 1827 lectures to raise Relief funds for the cooperatives, Hamilton and Combe exchanged numerous letters on the subject without resolving their differences. Hamilton proposed to refer the matter to a panel of three arbiters for the issues regarding the frontal sinuses to be tried.[69] The panel met twice without being able to determine on the means or methods to settle the issues. Hamilton submitted fourteen propositions of the phrenologists and his counter-propositions to be adjudged by the panel, while Combe desired a collection of skulls to be examined by the tribunal. Combe clearly favoured an empirical approach, while Hamilton believed that the truth of the science could be verified by examining its propositions. Combe's proposal was adopted in part eventually; the arbiters decided to make their own observations by attending the pathological dissections over a few months at the Infirmary and Fever Hospital. The case history of each observation would be available in a way that the skulls made available do not obtain.

The controversy now moved into 1828, beginning in January with a lecture given by Spurzheim in Edinburgh, against which Hamilton published a long letter in the *Caledonian Mercury*. Combe responded in the *Scotsman*, and Hamilton in turn criticised Combe's letter for its manifold misrepresentations in a private letter. A new direction also emerged in the development of the debate when religious grounds were touched upon by Hamilton's public comments on Combe's *Essay on the Constitution of Man* before its publication. Hamilton maintained the *Essay* was implicit atheism for its over-ridding message of material necessity, which led to fatalism concerning human action. The *Essay* had been publicly read at the Phrenological Society to canvass opinions but was not yet published. Combe was irate that Hamilton had taken the liberty to comment on his unpublished work. Hamilton defended his action by comparing an elaborate refutation published by the Christian Advocate of Cambridge of *Oedipus Judaicus*, which was only privately

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[68] Combe referring to his lecture at the Assembly Room, see Gibbon, *op. cit.*, I:193.

[69] Hamilton nominated Dr (later Sir Robert) Christison, Professor of Medical Jurisprudence, to act on his behalf; Dr John Scott acted for Combe, and James Syme, Professor of Anatomy and Surgery at Edinburgh University was the third arbiter. (Christison was one of the appointees to the medico-legal inspection for the Burke and Hare trial in December 1828.)

circulated. Combe's comment on that defence was, 'that the commission of one wrong by a Cambridge scholar does not justify another wrong by a senior wrangler of that university'.[70] To this allegation, Hamilton retorted by asking why Combe was better entitled to allude to opinions advanced by him in a paper read before the Royal Society, than he was to refer to opinions read before the Phrenological Society, which had been reported and published in the *Scotsman*.[71] The acrimony was by now tangible in the exchanges between the two opponents.

Putting aside some of the exchanges between the two opponents which at times degenerated into being personal, the nobler sentiments that motivated each into the debate were still apparent. Both Hamilton and Combe waged hugely their reputations behind their chosen positions and conducted themselves as if truth was at stake. Cockburn testified to Combe's sincerity in his cause in so many words:

> This George Combe, the patron and expounder of Edinburgh phrenology, is a calm, excellent man, with a clear natural style of didactic speaking and very benevolent objects. Some wise people call him a quack; but I am satisfied that he really believes in that folly, as many other honest men do. Some allowance must surely be made for the attractions which any creed has to a person whose adventure in it has ended in him finding himself its apostle.[72]

As for Hamilton, he stated the significance of Gall's doctrine in categorical terms. That if the doctrine was true, then it 'would not only afford a new instrument, but would supersede the old'. By 'the old', Hamilton meant the science of the mind founded by the Scottish school of common-sense philosophers. The two sciences of the mind, to Hamilton, arrived at 'conclusions the most contradictory', that the establishment of the one necessarily supposed the subversion of the other. In Hamilton's own words, the pre-eminent utility of mental philosophy was nothing less than:

> That it comprehends all the sublimest objects of our theoretical and moral interest; that every (natural) conclusion concerning God, the soul, the present worth and the future destiny of man, is exclusively deduced from the philosophy of mind.[73]

In short, mental philosophy was not only the foundation of our knowledge; it was the foundation for our beliefs in God, immortality of man, and of the moral freedom in

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[70] Combe's letter to Hamilton, 12 March 1828; quoted in Gibbon, *op. cit.*, 197.

[71] Ibid., 198-9.

[72] Henry Cockburn, *Memorials of His Time* (Edinburgh, 1856), 74.

[73] Hamilton, *Metaphysics,* 13.

our action. Hamilton's strong reaction against Combe's *Essay* which was later published as the *Constitution of Man*, was driven by what he saw as under threat – the moral freedom of man. In his letter to Combe, Hamilton stated his objections as:

> *no true phrenologist can be a Calvinist. 'The contingency of second causes', and 'the liberty of man undetermined by any absolute necessity of nature',* is a dogma, as much part and parcel of the Calvinistic scheme, and is as strongly enforced by the Confession of the Scottish Church, as any of the Five Points; and a clergyman who could maintain an opposite opinion, would promulgate a heresy, not only condemned by the standards of Calvinistic orthodoxy, but in contradiction to all the doctrines hitherto received as fundamental by *every Christian sect.* [74]

Here, Hamilton was asserting that a true Calvinist could not believe that our characters were determined by our physiology. 'The liberty of man undetermined by any absolute necessity of nature', as Hamilton stated, was in fact the foundational premise of Reid's moral philosophy. 'By the liberty of a moral agent', Reid meant, 'a power over the determination of his own will'.[75] In this respect, Reidian freedom differs from Lockean freedom, which provides that a man is acting freely if he has the power to do what he wills to do, or to refrain from doing what he wills to refrain from. More attuned than Locke had been to determinist arguments, in which the will was said to be subject to external influences, Reid went further and considered moral liberty in terms of the *causation* of the volition; that is, the power to will is the power to *cause* the act of willing. Reid continued by explaining, that if 'in every voluntary action':

> ... the determination of his will be the necessary consequence of something involuntary in the state of his mind, or of something in his external circumstances, he is not free; he has not what I call the liberty of a moral agent, but is subject to necessity.[76]

Reidian freedom was the foundation upon which the moral nature of man could be established. To Hamilton, 'the possibility of morality depends on the possibility of liberty'. The importance of man being a moral agent was explicated as: 'should we ever be convinced that we are not moral agents, we should likewise be convinced that there exists no moral order in the universe, and no supreme intelligence by which that moral order is established, sustained, and regulated'. It is no exaggeration

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[74] Hamilton's letter to Combe, 14 March 1828, quoted in Gibbon, 201; author's italics.

[75] Thomas Reid, *The Works of Thomas Reid*; quoted in William Rowe, *Thomas Reid on Freedom and Morality* (Cornell, 1991), 75.

[76] Ibid., 599.

therefore to claim free will as the first premise in Hamilton's philosophy, 'for, with the proof of the moral nature of man, stands or falls the proof of the existence of a Deity'. It is in this sense that 'Theology is thus again wholly dependent on Psychology'; and:

> should Physiology ever succeed in reducing the facts of intelligence to Phaenomena of matter, Philosophy would be subverted in the subversion of its three great objects, -- God, Free-Will, and Immortality.[77]

To Hamilton, phrenology was a doctrine which reduced the facts of intelligence to phenomena of matter. In doing so, phrenology threatened the Reidian basis of freedom by suggesting that every 'voluntary' action was the necessary consequence of something involuntary in the state of the mind, as determined by the physical state of the mental organs that aggregated into the brain.

If phrenology was falsehood in Hamilton's opinion, what then was the true science of the mind to him? The depth and breadth of the Scottish common-sense philosophy, of which Thomas Reid was the attributed founder and Hamilton, the acknowledged last prominent exponent, is beyond the scope of the current discussion. Its relevance to this thesis, however, resides in the fact that the common-sense philosophers created a science of the mind by studying the *phenomena* of the mind. The centre-place of the human mind in the conception of man by the common-sense philosophers was eminently borne out by the frontispiece of Hamilton's *Lectures on Metaphysics and Logic*:

> On earth, there is nothing great but Man;
> In Man, there is nothing great but Mind.

The mind was the essence of man, and in this respect, the common-sense philosophers practised under the mantle of Descartes. Their method was to argue from Common Sense, which in the words of Hamilton, was defined as:

> To argue from Common Sense is nothing more than to render available the presumption in favour of the original facts of consciousness – *that what is by nature necessarily* BELIEVED *to be, truly*, IS. Aristotle, in whose philosophy this presumption obtained the authority of a principle, thus enounces the arguments: 'What *appears* to all, that we affirm to be; and he who rejects this *belief* will assuredly advance nothing better worthy of credit.' As this argument

[77] Hamilton, *Metaphysics*, 32-35.

> rests entirely on a presumption, the fundamental condition of its validity is that this presumption be not disproved.[78]

The argument from Common Sense, therefore, hinges entirely on one presumption, namely, 'that as elements of our mental constitution – *as* the essential conditions of our knowledge, -- they *must* by us be accepted as true'.[79] By instinct, we want to object to such a presumption and protest, 'how can anyone just accept the original facts of consciousness as true?' However, when we attempt to verify such a presumption, what other means have we got but to fall back on our consciousness, our 'common sense'? As Thomas Reid succinctly summed up the inevitable presumption one has to accept in order to make possible any human knowledge:

> Every kind of reasoning for the veracity of our faculties amounts to no more than taking their own testimony for their veracity. There is an absurdity in attempting to prove by any kind of reasoning, probability or demonstrative, that our reason is not fallacious, since the very point in question is whether reasoning may be trusted.[80]

In other words, there is no means beyond itself to verify the trustworthiness of our consciousness; by necessity and by limitation, we have to accept 'what is by nature necessarily believed to be, truly, is'. The veracity of our mental faculties cannot be proved, and can only be taken on trust, by faith. Argument from Common Sense is perhaps not so much a method, as an acknowledgement of the foundational presumption that makes any mental philosophy possible, or indeed, any endeavours in knowledge.

Descartes saw this ultimate limitation or necessity, and fell back 'on the veracity of God, as the author of our faculties'.[81] Descartes also established consciousness as the primary means of identity, of being. With his famous motto, '*Cogito ergo sum*', Descartes not only separated the body from the mind, but also the mental world from the material world. Henceforth, philosophers from Locke to Berkeley, from Hume to the common-sense philosophers had to grapple with means to bridge the two worlds.[82] An associated question arising from the twofold reality

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[78] Hamilton, *Discussions,* 90, author's italics, quoted in Veitch, *Hamilton, Philosophical Classics for English Readers Series*, ed. William Knight, (Edinburgh, 1882), 111.

[79] Hamilton, *Reid's Works*, 743; quoted in Veitch, ditto., 110.

[80] Reid, *Intellectual Powers*, vi, 447; quoted in Veitch, ditto, 110.

[81] Veitch, *Hamilton*, 110.

[82] Hamilton described Reid's enquiry into the human mind as the result of being startled by Hume's argument that the same reasoning which disproved the Existence of matter, disproved, when fairly carried out, also the Substantiality of Mind. See Hamilton, *Lectures on Metaphysics*, 396.

is: 'which of the two worlds is primary?' In the scheme of Idealism, the material world is a product of the consciousness; in Material Realism, consciousness is a product of the material world. For instance, Thomas Brown was more of an Idealist, and maintained that we have no immediate knowledge of anything beyond the states or modifications of our own minds. Dugald Stewart tried to derive a scheme whereby equal status could be given to both the mental and material worlds, neither of which had primacy. It was a kind of 'sitting on the fence' position, which Hamilton described as untenable, because Stewart's claim for equal status for the two worlds, was itself an act of consciousness, and could not therefore be 'invalidated without self-contradiction'.[83] In other words, the fact that such an assertion itself originates from the mental world contradicts the claim for equal status of the mental and material worlds. Hamilton's position was that of a Realist, in that he believed in the existence of a permanent material universe, independent of human consciousness. By permanence, Hamilton probably regarded this ultimate reality as above space and time conditions, as evidenced in his discussion of Berkeley:

> If Berkeley held that the Deity caused one permanent material universe ... which ... on coming into relation with our minds through the medium of our bodily organism, is, in certain of its correlative sides or phases, so to speak, external to our organism, objectively or really perceived (the primary qualities), or determines in us certain subjective affections of which we are conscious (the secondary qualities), in that case I must acknowledge Berkeley's theory to be virtually one of natural realism.[84]

Contrasting natural realism with idealism, Hamilton continued his discussion of Berkeley as:

> ... if Berkeley held that the Deity caused no permanent material universe to exist and to act uniformly as one, but does Himself either infuse into several minds the phenomena (ideas) perceived and affective, or determines our several minds to elicit within consciousness such apprehended qualities or felt affections; in that case I can recognise in Berkeley's theory only a scheme of theistic idealism – in fact, only a scheme of perpetual and universal miracle, ... [supposing] the Deity to perform a petty miracle on each representation of each several mind. [85]

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[83] Hamilton, *Lectures on Metaphysics*, 274.

[84] Memoranda of Hamilton's reply to Collins Simon; quoted in Veitch, *Memoir of Sir William Hamilton* (Edinburgh, 1869), 347.

[85] Ibid., 347.

Natural realism was Hamilton's position, and his comments on Berkeley would suggest that Hamilton's form of theism acknowledged a permanent material universe created by the Deity, and in this resided the religious significance of Hamilton's realism.[86]

While Hamilton accepted the independent existence of a permanent material world, the mental world remained to him primary; it was the mind which studied the material world. The phenomena of the two worlds were separate and distinct: 'the phenomena of the mental world are not, like those of the material, placed by the side of each other in space'. Furthermore, the mind was conceived as one single indivisible unity by Hamilton: 'Each state of mind is indivisible, but for a moment, and there are not two states or two moments of whose precise identity we can be assured'.[87] In the language of the common-sense philosopher, the mind is often referred to by its 'phenomena', 'states', 'manifestations', or 'modifications'. In these qualifications of the mind, we get the sense that the philosopher would not like to speculate on the substance of the mind. Elsewhere in his lectures, Hamilton states that 'the existence of an unknown substance is only an inference we are compelled to make, from the existence of known phenomena'.[88] As regards the religious import of the mind, for Hamilton it lies in the assurance that the consciousness is the 'Identity of Mind or Person'. Plainly stated, this 'consists in the assurance we have, from consciousness, that our thinking Ego, notwithstanding the ceaseless changes of state or modification, of which it is the subject, is essentially the same thing – the same person, at every period of its existence'. In regard to this deliverance of consciousness, Hamilton continues, 'the truth of which is of vital importance, affording, as it does, the basis of moral responsibility and hope of immortality'.[89]

The brief discussion of Hamilton's science of the mind would suggest that the two sciences of the mind stood on antithetical grounds. As Hamilton put it, in Common Sense philosophy, 'the conscious mind is at once the observing subject and the object observed'.[90] Critically, both the observing subject and the object observed

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[86] 'Hamilton's Natural Realism affords a foundation for what is highest in the poetic view of nature; ... and the poetry of Wordsworth is the natural complement of the Realism of Hamilton', is the comment of John Veitch, *Sir William Hamilton, the Man and His Philosophy* (Edinburgh, 1883), 48-49.

[87] Hamilton, *Metaphysics*, 378-9.

[88] Ibid., 138.

[89] Ibid., 374.

[90] Ibid., 375.

belong to the same world – the mental world. In phrenology, the 'object' observed is transferred to the material world; the observing subject (still the conscious mind) and the object (the brain) are severed. Even without the existence of the frontal sinuses to disprove phrenology for him, or the threat to genuine moral freedom, Hamilton probably would never be able to endorse the new science of the mind. In fact, the phrenologists, in asserting that the brain was the organ of the mind, were effectively asking a Common Sense philosopher to abandon the mental world altogether. Even with Hamilton's natural Realism, to disown the mental world would still have been impossible for him.

IV

When David Ritchie resigned from the chair of logic and metaphysics in the University of Edinburgh in 1836, the path of Hamilton and Combe met again as candidates in the contest for Ritchie's successor. In 1820, Hamilton lost to John Wilson (Christopher North), in the contest for the Edinburgh chair of moral philosophy, which had been held by Dugald Stewart and then Thomas Brown.[91] As with clerical offices, so it was with academic posts, the system of patronage rendered chair appointments in Scottish universities political events, and at times notoriously so.[92] Hamilton blocked his chance in the 1820 contest by refusing to state that he

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[91] Cantor, *op. cit.*, 198, appears to think that it was the same chair (of moral philosophy) that Hamilton was contesting in 1836 as it was in 1820. Cantor states that 'on Wilson's resignation in 1836', Hamilton gained the position. It was not Wilson but Ritchie who resigned in 1836, and it was a different chair (that of logic) that Hamilton was contesting.

[92] When John Playfair moved to the Chair of Natural Philosophy at the University of Edinburgh in 1805, he vacated the Chair of Mathematics for contest. The patron of both chairs was the town council. The contest turned into a case in which party politics (between the Tories and the Whigs), and ecclesiastical politics (between the Moderates and the Evangelicals) interplayed to determine the outcome. It was during the French Revolution that the Moderates, who had hitherto tried to harmonise the interests of the church and state without falling into erastianism, started to align themselves with Tories, who were the predominate political interest under Henry Dundas. In face of an alliance between the Moderates and the Tories, the Evangelicals turned to the Foxite Whigs for political support. In the 1805 chair contest, John Leslie (1766-1832) was the candidate supported by the Whigs against the Reverend Thomas Macknight, the candidate supported by the Moderates. The Whigs accused Macknight of pluralism, and the Moderates questioned Leslie's religious orthodoxy on the basis of a note in Leslie's *An Experimental Enquiry into the Nature and Propagation of Heat*, for which Leslie was accused of scepticism for supporting Hume's doctrine of causation. Henry Cockburn, remarking on the contest as a contemporary, was of the opinion that metaphysics 'were the pretence; while a claim of clerical domination over the seats of learning was the real subject'. (See Henry Cockburn, *Memorials of His Time* (1856, Edinburgh, 1973), 203.) Other historians view the Leslie affair as marking the beginning of the decline of the Moderates in the Church of Scotland. See Richard B. Sher, *Church and University in the Scottish Enlightenment, the Moderate Literati*

was not a Whig – not a political opponent to the dominant Tory electors of the Town Council.[93] As it was in 1820, so it was in 1836, Hamilton declined to do what was politically expedient. In a letter to the Lord Provost of 8 April, Hamilton explained his position of declining to canvass for his candidacy. He assured the Provost that he was 'most anxious to obtain this Chair', but he was 'ambitious of it not as a boon granted, but as a right recognised':

> I only ask – I would only accept – the appointment on the ground of superior qualification. To mendicate the votes of the patrons by the private solicitation of myself or friends, and to forestall an unbiassed decision of the body ... by a private preliminary canvass of the individual electors, are proceedings which I not only scorn, but of which, as morally dishonest, I trust I am incapable.[94]

As for Combe, his confessed motive for entering the chair contest was tied to his ambition for phrenology. His letter to the Reverend Dr David Welsh,[95] ostensibly to persuade Welsh to apply for the chair, stated that:

> If [Welsh] shall, for any reason, decline to do so, you will lay me under the necessity of coming forward myself,.... My object would be to state the well founded claims of Phrenology to be admitted into the University as the science of mind, without consideration of my chances of success. I would present testimonials in favour of the science, not of myself; and by this means pave the way for a future candidate entering with greater ease. [96]

In his letter to the Lord Provost offering himself as a candidate, Combe reiterated that it was his regard that phrenology was 'the only true science of Mind', that he felt bound by duty to enter the contest.[97] The energy and efforts invested by Combe in canvassing for his candidacy were typical of the man's dogged determination. In a short space of time, Combe amassed 58 testimonials from Britain and abroad.[98] In respect of two of these testimonials, by Andrew Thomson and Thomas Chalmers,

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(Edinburgh, 1985); and Jack Morrell, *Science, Culture and Politics in Britain, 1750-1870* (Aldershot, 1997), 63-82.

[93] Hamilton's letter to Lord Melbourne, 11 February 1840; quoted in Veitch, *Memoir*, 260.

[94] Quoted in Veitch, *Memoir*, 192.

[95] Welsh was the retiring Moderator during the Disruption of 1843. He and Thomas Chalmers led the Non-intrusionist commissioners out of the established Church of Scotland to form the 'Free Protesting Church of Scotland'. As a phrenologist, Welsh took a deep natural theological interest in the science. He distanced himself from phrenology after Combe's publication of the *Constitution of Man* in 1828.

[96] NLS MS7378, f.34, George Combe to David Welsh, 7 April 1836, [Draft Letter].

[97] George Combe (ed.), *Testimonials on behalf of George Combe* (Edinburgh, 1836), 3.

[98] Ibid., the book was compiled by Combe and printed with private means. It lists all his 58 sponsors and their testimonies, details of the proceedings of the chair election and excerpts from some newspapers on the contest.

Combe's youngest brother,[99] Andrew chided him for forcing 'a testimony from their silence at variance with their real opinion'. Combe had cited Thomson and Chalmers as 'not disapproving of [his] doctrines on the ground they had not publicly attacked them, while all the time [Combe] knew that in their private life they did condemn them'.[100] Equally candid was Andrew over George's chances with the chair:

> I never could fancy that you had any, ... and may I add I fear that you are doing some things under the excitement which when it is past you would wish undone.[101]

As close brothers, Andrew was privy to George's private thoughts. Andrew's letters revealed certain duplicity in George Combe's motive in entering the chair contest that self-interest almost certainly played a part. But Combe's canvassing probably shaped the press in seeing the chair contest as nothing short of a duel between the two sciences of the mind.

Commenting on the forthcoming contest for the Chair of Logic at Edinburgh University in 1836, the *Edinburgh Chronicle* could not praise Combe enough. It forewarned that if the Town Council should fail to elect Combe to the Chair, it would leave an indelible stain on the character of the citizens whom the Council represented.[102] On the other hand, the *Scottish Guardian* stressed that the successful candidate should be a philosopher with Christian principles. Combe's opinions were judged to 'differ widely from the doctrinal standards of the Church', and phrenology was described as 'a false philosophy'. Referring to the latest elective reform of Council, the *Guardian* highlighted the significance of the contest as a test case whereby the public would 'judge in the end whether political connection, and personal influence' had less power than formerly in deciding a professorship.[103] Imbedded in the comment of the *Scottish Guardian* was the firm belief in an alliance between the university and the church, originated during the Reformation when the college was founded to prepare candidates for ministry. The Council was expected

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[99] The bond between the two brothers was strong throughout their lives. George financially supported Andrew in his medical training, brought him into his household because of Andrew's sickly constitution. He also converted Andrew to phrenology, and as the physician to the Belgian Royal family, Andrew became one of the most illustrious phrenologists.

[100] NLS MS7238, f.14, Andrew Combe to George Combe, 12 August 1836; author's underlining.

[101] NLS MS7238, f.10, Andrew Combe to George Combe, 7 July 1836.

[102] Quoted in Geroge Combe, *Testimonials*, 25.

[103] Extract from the *Scottish Guardian* of 12 April 1836, quoted in a pamphlet, George Combe, *The Suppressed Documents or an appeal to the Public against the Conductors of the Scottish Guardian* (Edinburgh, 1836), 5.

to honour such an alliance by electing an orthodox Christian professor only. In the opinion of the *Guardian,* Combe was disqualified on religious grounds. Hamilton was not immured from religious scrutiny either. For his writing on Schelling and Hegel, Hamilton was suspected of infidelity. While Hamilton was writing in opposition to Hegel and Schelling, his opponents misunderstood him as writing in support of German Absolutism. The religious allegation against Hamilton was brought forward on the day of the election. The City Treasurer, Adam Black, spoke out against such charges, and denounced the 'too common crime of making religion a stalking-horse in the disputes of the day'. Black asked for proof to be procured from Hamilton's articles to support the allegation of infidelity, to which there was no reply; and the allegation was dropped.[104]

The actual election took place on 15 July 1836 during a special meeting of the Edinburgh Town Council presided by Sir James Spittal, the Lord Provost. Hamilton emerged as the successful candidate out of the ten contestants. The voting system of the thirty-two municipal representatives of the Council was that votes were cast with regard to all the candidates in the first instance, and the lowest struck off from the list for the next round of voting until the contest should lie between two. Combe was struck off when it was down to four candidates. Hamilton and Isaac Taylor stood for the final round of voting, and Hamilton won by gaining eighteen votes against Taylor's fourteen.

A level account of the Chair contest featured in Lord Cockburn's memoir. In respect of Combe's candidacy, Cockburn described that 'he claimed his place honestly and solely on phrenological grounds'; but that 'to the honour of the electors, Combe had only three votes'. Cockburn considered Hamilton the best candidate, 'able, learned both in ancient and modern languages, laborious, and devoted to intellectual pursuits', as 'the only man [then] in Scotland' being 'reverenced by the profound on the Continent'. Henry Cockburn referred to the 'unusual interest' excited by the case as partly due to the fact that 'it was watched as a specimen of the reformed town-council's elective virtue'.[105] Cockburn's assessment of the Council's elective virtue was that 'they [had] just saved themselves', referring to the slim majority of four credited to Hamilton.

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[104] Veitch, *Memoir*, 197.

[105] Henry Cockburn, *Journal of Henry Cockburn, being a Continuation of the Memorials of His Time, 1831-1854*, 2 vols. (Edinburgh, 1874), I:125.

If the 'reformed Council's elective virtue' generated part of the interest, the predominant strand of interest lay with the fact that in the public perception, the contest was a trial-case for phrenology. Those who supported Combe would like to have seen phrenology established as the creditable science of the mind, displacing the metaphysics of the common-sense philosophers, of which Hamilton was a fine representative. Those who supported the common-sense philosophy as the true science of the mind considered it a much-prized national intellectual heritage. The *Spectator*'s report in the days leading up to the election highlighted this aspect of the interest, regarding the future of the philosophy of mind:

> The chief candidates are Sir William Hamilton and Mr George Combe; and the interest arises from the pretensions of the latter to establish the Phrenological Philosophy of Mind and Morals for the first time, in a University chair.[106]

Echoing the *Spectator*, the *Bath Herald* elevated the contest to the philanthropic platform, describing it as a 'struggle' that could 'not be regarded with indifference by any whose philanthropy was not purely individual, since the possession of a true or false system of moral and intellectual science involve[d] questions indissolubly associated with the best interests and truest happiness of mankind'. Another English newspaper, the *London Courier,* supported Combe, and saw the potential election of Combe in the context of Edinburgh pioneering into another new science:

> ... the Town Council of Edinburgh ... would gain respect and honour from conferring the Chair on Mr. Combe. Scotland has the honour of having founded the science of the wealth of nations. She should be ambitious of adding to her glory by promoting the first of all studies – that of man.

The *Scotsman* supported Combe's candidacy by quoting the authority of Archbishop Whately of Dublin, who had studied phrenology in great earnest. Whately claimed that the 'phrenological writers employ a metaphysical nomenclature far more logical, accurate, and convenient, than Locke, Stewart, and other writers of their schools'. Another Scottish newspaper, the *Glasgow Argus,* deciphered for its readers the three-fold task of a Professor of Logic and suggested that a phrenologist could discharge the duty as well as a common-sense philosopher.

> He has to expound the practical sciences of correct management of the intellectual powers (logic) and exegesis (rhetoric), and he has to rest these upon the ultimate principles of mind (psychology).... We do not

[106] Excerpts of newspaper reports cited in Combe, *Testimonials*, 148-157.

> see that a man's being a phrenologist, should of itself, exclude himself from a Logic Chair.

The *Glasgow Argus* ended its comment by remarking that Combe's testimonials were such as it had 'scarcely ever seen in favour of one individual'. Other minor Scottish newspapers like the *Fife Herald* and the *Kilmarnock Journal*, which supported Combe's candidacy, offered the more sensational touch to the occasion. The *Fife Herald* described the contest as 'an outcry', and that 'to be pursued by a sectarian and bitter hostility' was the price 'every man must pay for originality and eminence'. The *Kilmarnock Journal* tried to portray Combe as a founder of a new science being persecuted for the sake of a true science like other great scientific pioneers:

> [phrenology] has paid 'the usual tax of entry' – that, after bringing, like the discoveries of Galileo, of Harvey, and of Sir Isaac Newton, the wonted need of persecution upon its founders, it is daily witnessing its scoffers becoming the most zealous of its devotees.[107]

Chronologically, the chair contest was like a culmination of the debates between the two sciences of the mind that had been ongoing for over three decades in Edinburgh. If common-sense philosophy had won the day, phrenology had not lost for good. In one sense, 'the scoffers have indeed turned devotees', for it is now little debated that the brain is the organ of the mind, but the emergence of consciousness, which the common-sense philosophers waged so heavily on, remains a mystery. The mental world still has a boundary of its own and the task of bridge-building between the material and mental worlds continues for philosophers. In the course of this long debate in Edinburgh, however, the question of Materialism: 'Whether the *substance* of which the thinking principle is composed be matter or spirit?' was less immediate than it was in the debate on life and mind in England discussed in the previous chapter. As the last prominent exponent of the common-sense philosophy, Hamilton focused the debate on the basis of Free Will, on which alone could man be a moral agent, and on which alone any beliefs in God and immortality ultimately depended. If the chief issue against phrenology for Hamilton was a secure moral basis for mankind, it is to be found that Combe was seeking nothing too different in embracing phrenology:

> According to Phrenology, morality and natural religion originate in, and emanate from, the primitive constitution of the mental powers themselves. ... in this life mind is never manifested without brain, ...

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[107] Combe, *Testimonials*, 151

> [If] God has made the brain to think, ... His objects in creating man will not be defeated on account of his having chosen a *wrong substance* out of which to constitute the thinking principle.[108]

How Combe carved out a code of morality based on natural law with the science of phrenology is the subject matter of the next chapter. As for Hamilton, though he emerged as the winner in the chair contest, his battle for academic freedom was not won so decisively against the interference from the town council as the patron of the chair. Whether Hamilton was allowed to divide his lectures into two courses, one upon Logic, and the other upon Metaphysics, and whether he was entitled to charge a fee for each course, was the subject of a protracted debate between Hamilton and the *Senatus Academicus* of the University of Edinburgh.[109]

V

In conclusion, it is interesting to reflect on the difference between London and Edinburgh in their differing responses to new scientific ideas. A letter to Henry Brougham from Lawrence's chief religious critic, the Reverend Thomas Rennell offered some useful insights as to how Edinburgh was being regarded as an intellectual centre by a quintessential High Church, Tory Anglican minister:

> For many years, as you, Sir, well know, Edinburgh has been the headquarters of infidelity. The diffusion of scepticism among the higher ranks is fully equal to that of religion among the lower. ... The diffusion of knowledge, and the interchange of opinions which marks the present day, will effectually prevent the conversion of religion into an engine of state police.[110]

The social and political utility that Rennell had in mind for religion was clearly stated here. Religion was, for Rennell – an engine of state police. In this respect, Rennell was most concerned with the utility of religion in enforcing an external code of morality which would support and reinforce the *status quo*. Lawrence's theory of life was subversive to such a remit assigned to religion, as demonstrated in the way

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[108] Combe, *Outlines of Phrenology*, *op. cit.*, 33.

[109] See EULMSS College Minutes, The University of Edinburgh, first series, vol. VI: f. 75-96.

[110] Thomas Rennell, 'A Letter to Henry Brougham, Esq., M.P. upon the Durham Speech and the three articles in the last *Edinburgh Review*, upon the subject of the clergy', 10 February 1823, 1-104, 31-2. The letter was printed as a pamphlet of 104 pages, and the copy at the National Library of Scotland bears the hand written inscription of Rennell to Lord Lilford.

Richard Carlile had deployed Lawrence's scientific ideas to radicalise politics. The socio-political climate in those years, coupled with the publicity of Lawrence's controversial lectures being given in the capital city of London, heightened the authorities' vigilance against ideas which were subversive to the role of religion as an engine of state police. As Rennell remarked to Brougham, 'the vigilance of the clergy [in England] enables them to mark the first appearance of the disease (of infidelity), and their talent to arrest its contagion'.[111] By contrast, even allowing for the fact that phrenology had only started to spread in 1816 from Edinburgh to England, phrenology did not engender a debate of the same nature as Lawrence's *Lectures* precisely because it was useful as an engine of state police, in the sense that it was a very effective popular science that would educate the lower orders towards the end of 'right' behaviour.[112]

Rennell regarded Edinburgh as a hotbed of scepticism, and the spread of scepticism was a consequence of the deficiency of the Scottish clergy, who:

> as a body have neither the learning nor the power which is necessary, in these times, to defend the citadel of Christianity, and to silence its assailants. There is no inducement held out in the Scottish Church for a young man of family of talent, or of attainment, to enter the clerical profession, or to bring any superior endowments to the defence and support of the sacred cause.[113]

The deficiency of the clerics, in Rennell's mind, allowed the philosophers to spread scepticism, and scepticism readily led to infidelity. Hamilton, though a philosopher and not a cleric, was not unconcerned about a secure basis for morality. However, unlike Rennell, Hamilton's concern for a basis of morality was primarily in the *internal* sense as defined in this thesis. Hamilton's basis of morality was not founded on religion as a practice (for instance, he motioned against religious tests at the University *Senatus*) but on the metaphysical notion of free will, and the consequences of moral responsibility.[114] It was crucial whether free will was real or

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[111] Ibid., 31.

[112] See Ian Inkster, 'The Social Context of an Educational Movement: A Revisionist Approach to the English Mechanics' Institutes, 1820-1850', *Oxford Review of Education*, 2 (1976):277-307; and Edward Royle, 'Mechanics' Institute and the Working Classes, 1840-1860', *The Historical Journal*, 14 (1971): 305-321.

[113] Rennell, *Letter to Henry Brougham*, 32.

[114] 'Sir William Hamilton intimated that at the next meeting he would lay before the *Senatus* a motion in reference to an expression of opinion by them against the law as it at present stands touching religious tests by professors', per minutes of *Senatus* meeting on 25 November 1843. (EUL MSS College Minutes of The University of Edinburgh, second series, volume VI, f. 491.)

a mere illusion, because free will was, for Hamilton, the foundation of human morality. It was for this reason that the phrenological debate took place in Edinburgh, as the capital of Scottish philosophy, in which moral and mental philosophy go hand in hand. It was the Scottish Common Sense tradition of establishing the basis of morality as a metaphysical premise that saw in the materialistic notion of the mind underpinning the system of phrenology a proposition inimical to human morality.

The geographical differences of the two controversies highlight the fact that in London where the Lawrence controversy unfolded, the concern for morality was more in the external sense – of morality as an engine of state police. In the Edinburgh phrenological debate, the chief issue was morality in the internal sense – that innate notion that humankind possesses free will as the basis for moral decision.

George Combe: His Phrenology, His Religion

> I too claim to be a Christian. I repeat my conviction, that Christianity owes its strength to its precepts having sprung from the pure sources of the moral and religious emotions in its founder and leading promulgators, and to the divine administration of this world being really adapted to afford scope and enjoyment to the whole faculties of man, which they act under the enlightened guidance of these higher powers.
>
> George Combe, 1853[1]

Beginning the year before the outbreak of the French Revolution and ending the year before the publication of Darwin's *The Origin of Species*, the life of George Combe (1788-1858) was bracketed by these two landmark events which shaped the course of political, social and intellectual history of nineteenth-century Europe. Born on 21 October, in a house situated beneath the steep bluffs supporting the Edinburgh Castle in what was then known as Livingston Yards,[2] Combe's birthplace was humble and insalubrious. The family home was located in a damp, low place shaded from any winter light and was too small for the seventeen children who were to share it. To the east and south of Livingston Yards were tanning works and magnesia work. The refuse from these industries was freely discharged into open ditches. Further east of these industrial sites was an acre of ground, which turned into a filthy swamp in winter, and was covered with dunghills in summer. Running past the family home was an uncovered public drain, which carried the soil from the houses in Grassmarket and Westport. The house was attached to the family-owned brewery, which was the chief means of their livelihood. The windows of the house faced north and west, in the direction of the gardens belonging to the family, which were let out to a market-gardener; and beyond them were cornfields. However, the open

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[1] George Combe, *An Inquiry into Natural Religion* (Edinburgh, 1853), para. 447, 202.

[2] The autobiography of Combe only covered the period from birth to 1804, and was included verbatim as Chapters 1 to 4 of the first volume of Gibbon's *Life of George Combe*, 1-68. When Combe penned his autobiography in the 1850s, he commented in a footnote that the locality had much changed since his childhood. 'The extension of the town, and the conversion of the swamp, which was formerly the bed of the North Loch, into the Princes Street Gardens, have ... greatly changed the surrounding district'. Gibbon, *op.cit.*, 2.

and cheerful vistas through the windows merely gave the promise of health which was destroyed by the other influences. Of such living surroundings Combe was to write, 'a more unhealthy residence [could] scarcely be conceived'.[3] He also noted that around 1800, his parents, thirteen children and two servants were all crowded into a few rooms of small dimensions.[4] Combe further remarked, that at the turn of the nineteenth century, every one still acted on the hypothesis that 'the mind was regarded as independent of the body', and 'the laws of health, depending on ventilation, ablution and exercise were wholly unknown'. Of the seventeen children born to the Combe family, eleven survived their father when he died of apoplexy in September 1815.[5] Combe's feeble constitution was to cause him considerable suffering, and with yearning and lament, he wrote at the age of twenty-three: 'I do not expect to live long, though I eagerly desire I may'.[6] The many deaths in the family and the bad health of those who survived, Combe unequivocally attributed to the living surroundings.

Combe's father, who commanded a striking stature of six foot two inches, was a brewer, whose education equipped him to do arithmetic and book-keeping, and to read and write, though with great deficiencies in grammar and spelling. The education of Combe's mother was even more limited, and while she could read, 'her writing did not extend beyond subscribing her own name'.[7] Though the family was financially independent, neither of the parents were themselves educated enough to guide Combe into a higher social station, nor well-connected to assist the children in their entry to society or a profession. Nonetheless, Combe was given an adequate education to nurture social aspirations beyond the confines of Livingston's Yard. When Combe was sixteen, Combe's father intended to apprentice him to a cloth manufacturer. The father and son were on the way to an interview for such a position when they met with a relation, William Arnott, who was Baillie of the Canongate. Arnott suggested the career of a Writer to the Signet for George Combe

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[3] Gibbon, *op. cit.*, quoting Combe's autobiography, 3.

[4] The Combe family lived in a house with two storeys. On the lower floor were two rooms, a kitchen and a bed-closet; on the upper were three rooms and a small bed-closet. In 1798, an additional room and bed-closet were built to accommodate the growing family. Gibbon, *op.cit.*, 2.

[5] Ibid.,90.

[6] Ibid.,.75.

[7] Combe expressed his surprise and regrets over the deficiency of his mother's education by remarking on the fact his maternal grandfather was 'the proprietor of his own land, and a freeholder of the country'. Gibbon, *op. cit.*, 3.

instead of that of a draper. The father's comment was that 'he had always understood that high, rich, and influential connections were necessary to succeed in the law, and that in the case of his sons all these would be wanting'.[8] Arnott made the necessary connections on Combe's behalf, and set him on the road to becoming a Writer to the Signet. Given his humble upbringing, the entry into a gentleman's profession was not without significant social pains for Combe. For instance, Combe admitted how he realised his pronunciation was 'incorrect, vulgar, and slovenly in the extreme' on entering the law; and he undertook vigorous training in elocution to rectify the shortcoming. It was an example of the indomitable spirit in the man; and his approach to life typified that spirit of self-improvement and self-reliance that were deemed such virtues of his generation. Whether it was speech or health, Combe found the motivation to overcome the odds against him. By observing strict rules of health he later incorporated in *The Constitution of Man*, Combe was able to live to the age of seventy despite his weak physical constitution.

It was equally remarkable that Combe should dedicate himself to helping his younger brother, Andrew, to rise above the station into which he was born. Combe financially maintained Andrew through his study of medicine at the University of Edinburgh, then an international renowned centre for medical education. Andrew became a distinguished physician and was appointed to the Royal court in Belgium. He was a frequent guest of the Belgian Royal family and their circles, but more self-assured and self-effacing than George Combe, Andrew was neither pretentious nor affected by his own success.[9] The careers charted out by the Combe brothers for themselves would suggest that during this period there was a greater degree of social mobility in Scotland than in England, where the physicians were a prestigious elite class recruiting chiefly from the second sons of the gentry or the sons of clergy.[10] Combe's older brother, Abram had his own tannery business until he visited Robert

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[8] Gibbon, *op. cit.*, 63.

[9] NLS MS 7238, f.8, Andrew Combe to George Combe, from Brussls, 18 April 1836. Andrew related his dinner with the Royal family, and remarked on the fact that 'the Royal personages were all as amusing and frank with each other as any private family could be, and seemed to be on the very best terms – those of unconstrained affection and simplicity'. Andrew suffered from poor health all his life, and his health seemed to have imparted to him a sage distance with which he watched the affairs of the world, and was able to be a judicious critic of George Combe's conduct, for instance, over the 1836 chair contest as related in the previous chapter.

[10] See Noel Parry and Jose Parry, *The Rise of the Medical Profession* (London, 1976), 105-107. Scottish physicians were not formally recognised in England in this period, but the lack of control and organization of medical practice allowed Scottish physicians to settle and practise without undue interference.

Owen (with George) in 1820at New Lanark, where Owen had set up his 'ideal society' on a communal estate with housing and education provided for the workers. Abram Combe became a convert of Owenism and he tried a small-scale community experiment at his tan works. With the support of other philanthropists, Abram embarked on the ambitious venture at Orbiston on an estate of 290 acres nine miles east of Glasgow to found a new community based on Owenite principles, which Abram defended against the common charges of atheism and infidelity.[11]

To a certain extent, the philanthropic spirit of Abram Combe which led him to embrace Owenism was shared by George Combe, albeit tinted with a desire for personal fame. An entry in his diary in 1811, at the age of twenty-three, spoke of that 'vanity [he felt] to be a feature of his mind, strongest in its weak state'. He remarked his hopes that 'a desire of fame may be one mark of a mind that deserves it'; but then he was tormented by the fact that he was 'a low man among the great', with 'no important friends to support him'. Combe's desire for fame was bound up with a sense of calling or destiny, which he articulated as a belief that he had the 'powers of mind sufficient to write some useful book on human nature, and especially on the education and intellectual state of the middle ranks of society'.[12] This sense of calling was further conjoined with a spiritual quest for divine governance, which he first sought in the agency of earthly governments, then in different sciences, from the political economy of Adam Smith and Malthus, to chemistry, physiology and the philosophy of the mind of Dugald Stewart. The quest eventually ended in 1816, when Combe attended a series of lectures given by Dr Spurzheim in Edinburgh on phrenology, which was a new science of mapping mental faculties to the physical locales of the human brain.[13] It was from Spurzheim that Combe learned his phrenology. From the outset, phrenology was not a mere anatomical science of the brain for Combe, but a new philosophy of the mind fraught with religious implications and social applications. For Combe, the adoption of phrenology resembled a religious 'conversion' – it was a faith commitment that

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[11] See J.F.C. Harrison, *Robert Owen and the Owenites in Britain and America – The Quest for the New Moral World* (London, 1969) for a discussion of Abram Combe and Owenism, and of phrenology and Owenism.

[12] Ibid., 66-73.

[13] Phrenology is derived from two Greeks words; *Phren* means mind; and *Logos* means discourse. Combe defines phrenology as the science that 'treats of the faculties of the Human Mind, and of the organs by means of which they manifest themselves; but it does not enable us to predict action.' Combe, *Outlines of Phrenology*, 9th edition, (Edinburgh, 1854), 1.

demanded a complete re-orientation of outlook. After 1816, phrenology became the new *Weltanshauung* whereby Combe interpreted man and his place within the physical universe.

Once he became convinced of the science of phrenology, Combe turned himself into its most effective champion. From 1817 to 1836, Combe was developing his career as a Writer to the Signet, and at the same time engaged in a rigorous programme aimed at disseminating the science to the widest public. With 'the zeal of a religious missionary', Combe seized on every opportunity to preach his newly found 'gospel', giving lectures to a wide range of audiences, from ministerial divines and medical professors, to 'the clerks and shopkeepers and their wives and daughters'.[14] He also embarked on lecture tours to take his 'gospel' further afield in Britain and the United States, sometimes at great cost to his own health. He even took phrenology to the gaol by examining David Haggart's head prior to the trial that convicted Haggart as the murderer of his jailer in Dumfries.[15] Edinburgh became the base of Combe's missionary activities; and he helped to found the Edinburgh Phrenological Society in 1820, and the Society's *Phrenological Journal* in 1823.[16] Apart from being an indefatigable preacher, Combe was also a prolific writer, disseminating his one big idea through pamphlets, journals, published lectures and books. The close of this period was marked by Combe's candidacy in the contest for the Chair of Logic in the Edinburgh University in 1836. The episode represented the culmination of Combe's social ambition for phrenology and himself. The election to the chair would have represented a social elevation for Combe, and a powerful symbol that the philosophy of the mind of the Scottish common-sense school was being supplanted by phrenology. The eventual election of Sir William Hamilton to the Chair carried the implicit verdict on phrenology as a science that had failed to gain the intellectual respectability that Combe so desired.

Soon after the chair contest, Combe decided to retire from law at the age of forty-eight. In a letter to his friend, James L'Amy, Combe reasoned that in order for

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[14] Henry Cockburn, *Journal of Henry Cockburn, 1831-1834*, 2 vols., (Edinburgh, 1874), I:74.

[15] George Combe, *Phrenological Observations on the Cerebral Development of David Haggart* (Edinburgh, 1821). On 29 May 1821, Combe visited Haggart in Edinburgh jail to make a sketch of Haggart's natural character through phrenological observations. The Turnkeys present turned the thing into a joke after Combe's departure. Haggart interjected by saying, in a serious manner, 'that it was no joke, for Mr Combe had told him a great many things that were true,... that he thought his real character had been described ,and that he was surprised at it.'

[16] See Hewett C. Watson, *Statistics of Phrenology* (London, 1836).

phrenology to continue its influence, he needed to rectify his deficiencies in scientific knowledge, so that he could take his 'place among men of scientific attainments'.[17] A review of Combe's activities after 1836 would suggest a different emphasis from his pre-1836 period. He was still lecturing, writing and promoting phrenology, but phrenology was less in the centre of his activities, and became more a means to an end. His writing after 1836 covered a wider spectrum of political and domestic issues related to, for instance, the Currency Question, colonial government in respect of British rule in India, capital punishment and prison reforms, as well as the need for a secular education and public health. He also seemed to reflect more extensively on the relationship between science and religion, publishing *On the Relation between Science and Religion* in 1847, and privately circulated *An Inquiry into Natural Religion* in 1853.

In the opening sentence of Combe's biography, published in 1878, Charles Gibbon wrote, 'The name of George Combe is now rarely heard in scientific or philosophical circles'.[18] It is true that Combe has never attained the kind of stature as Darwin in scientific or philosophical circles. But like Darwin, Combe had published a book that was hugely influential during his lifetime. As Harriet Martineau remarked on the death of Combe, 'A man must be called a conspicuous member of society who writes a book approaching in circulation to the three ubiquitous books in our language – the Bible, *Pilgrim's Progress,* and *Robinson Crusoe*'.[19] The popularity of *The Constitution of Man* cannot be over emphasised. First published in 1828, its sale had reached over 100,000 copies in Britain by 1860, and another 200,000 more copies in America. By comparison, *The Origin of Species*, published in 1859, had only sold 50,000 copies by the end of the century. It was claimed that for the second third of the nineteenth century, *The Constitution of Man* was next in circulation to those mentioned by Martineau, and that it stood on bookshelves where no others but these were to be found.[20] Admittedly, the circulation of *The Constitution of Man* was much boosted by the Henderson bequest, which allowed the People's edition to be printed in 1832 in a 'cheap form so as to be easily purchased

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[17] Letter of 16 November 1836, cited in Gibbons, *op. cit.,* 333.

[18] Charles Gibbon, *op. cit.*, xi.

[19] Harriet Martineau, *Biographical Sketches* (London, 1869), 265-276. The book is a collection of memoirs written for the *Daily News*.

[20] William Harral Johnson, 'Death of Mr George Combe', *Investigator, a Journal of Secularism*, 5(1858):93; quoted in Roger Cooter, *The Cultural Meaning of Popular Science* (Cambridge, 1984), 120.

by the more intelligent individuals of the poorer classes and Mechanics' Institutions'.[21] Another title that had achieved phenomenal sales on this scale was Tom Paine's *Rights of Man* (1791), allegedly with 200,000 copies sold by 1793. During the nineteenth century, *Rights of Man* and *Constitution of Man* were sometimes bound together for sale, and were equally condemned by certain sections of society.[22] Ever since its first publication, *The Constitution of Man* had aroused considerable opposition with many viewing it as a text for promoting materialism. Combe was denounced as an infidel, a materialist, and an atheist.

The reception of *The Constitution of Man*, to a certain extent, mirrored that of Lawrence's lectures and reflected the religious sentiments of some sections of the British public against any hints of scientific materialism in the aftermath of the French Revolution and the Napoleonic wars. Combe was himself mindful of the likely hostile reception of *The Constitution of Man* given the political context, and asserted in the preface the fact that 'the views of the natural laws themselves, advocated in this work, are diametrically opposite to the practical conduct of the French revolutionary ruffians, requires no demonstration'.[23] Gibbon interpreted the hostile reception of *The Constitution of Man* as coloured by the still 'comparatively fresh memory' of the people of 'the attempt of the French revolutionists to overturn Christianity'. He continued by saying, 'although [the people] might tolerate any departure from established rule in science, they would not allow similar dealings with religion'.[24] Gibbon's comment registered the fact that *The Constitution of Man* was not just a book about the rule of science, it was a book with deep religious import that could not be easily passed over. As one historian, Roger Cooter, has claimed, 'it was very largely out of the religious controversy over *The Constitution of*

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[21] Charles Gibbon, *Life of George Combe*, 2 vols. (London, 1878) 1:257-8. William Ramsay Henderson (1801-1832), was born and died in Edinburgh. He was so convinced of the benefit of phrenology that he bequeathed the residue of his estate, which was in excess of £5,000, towards the diffusion and cultivation of phrenology. In his will, he declared: 'that I dispose of the residue in the above manner, not from being carried away by a transient fit of enthusiasm, but from a deliberate, calm, and deep-rooted conviction that nothing whatever hitherto known can operate so powerfully to the improvement and happiness of mankind, as the knowledge and practical adoption of the principles disclosed by phrenology, and particularly those which are developed in the 'Essay of the *Constitution of Man*'.

[22] Robert M. Young, 'The Impact of Darwin on Conventional Thought', in Anthony Symondson (ed.), *The Victorian Crisis of Faith* (London, 1970), 13-35, 16; Charles Gillispie, *Genesis and Geology* (Harvard, 1996) 163, 172; R. K. Webb, *The British Working Class Reader*, 1790-1848, (London, 1955), 38; cited in Cooter, footnote 53 on 338.

[23] Cited in Gibbon, *op. cit.* I:181, 317.

[24] Gibbon, *op. cit.*, I:317.

Man that was born the so-called nineteenth-century conflict between science and religion'.[25] If *The Origin of Species* had triggered off a full-scale conflict between science and religion, Combe's *The Constitution of Man* had contributed to the gathering of such forces that were to unleash in this conflict.

While there is no doubt that *The Constitution of Man* is an important force in the history of science and religion, to instigate a conflict between science and religion was by no means the intention of Combe when writing the book. To the contrary, Combe conceived his work as filling a gap in the existing Christian teaching that was flagrantly deficient in the knowledge of the natural laws. He lamented that 'the popular interpretations of Christianity have thrown the public mind so widely out of the track of God's natural providence, that *His object or purpose* in this pre-ordainment is rarely thought of'.[26] This chapter argues that *The Constitution of Man* was Combe's attempt to integrate the science of phrenology with the rudiments of his religious faith.

Another aim of this chapter, to quote Brooke and Cantor, 'is to move the focus away from the history of ideas', and centre it on Combe as an individual. It is in recognition that the individual is 'a site worthy of study', and this short biography on Combe 'offers an appropriate genre for understanding the construction of science-religion relationships'.[27] It is by understanding how Combe integrated his science and his religion in *The Constitution of Man* that we can begin to appreciate the 'religious' dimension of the wide-ranging appeal the book commanded on Combe's contemporaries. In the words of Martineau:

> Much else there is in the book which fill in remarkably with the needs and desires of the time; there can be no doubt that the effect of the work, as a whole, on the health, morality, and intellectual cultivation of the people, has been something truly memorable.[28]

The project undertaken by Combe in *The Constitution of Man* was nothing less than instituting a new moral code based on natural law. A large component of 'the needs and desires of the time' that *The Constitution of Man* was filling in could have been this cogent alternative to a religious basis of morality based on doctrinal Christianity. For this reason, Combe was decried as an infidel or atheist by those who adhered to

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[25] Cooter, *op. cit.*, 129.

[26] Combe, *The Constitution of Man* (1828, Edinburgh, 9th edn.,1860), 26.

[27] John Brooke & Geoffrey Cantor, *Reconstructing Nature* (Edinburgh, 1998), 247.

[28] Martineau, *op. cit.*, 265.

the doctrinal faith within the established national churches. Unlike Darwin, who admitted his loss of Christian faith, Combe professed himself a Christian to the end of his life. This chapter examines the ways in which Combe's religion and his phrenology reinforced each other. It will consider the grounds on which Combe claimed his efforts in promoting phrenology were sympathetic to Christianity. In conclusion, this chapter examines whether Combe was justified to claim himself a Christian. And if so, in what sense was Combe a Christian, and in what sense had Combe's works contributed to the forces undermining the authority of the established faith?

II

When Combe spoke about Christianity, he spoke with the credence of someone who had been brought up in an environment steeped in Calvinism. In his unfinished biography, Combe gave a brief account of his religious education. From the age of seven to seventeen, every Sunday, the Combe family went to church from eleven o'clock in the morning to one o'clock in the afternoon, and from two to four in the afternoon after a brief lunch. At five o'clock, the children commenced learning a portion of the Shorter Catechism, and when older, the Larger Catechism, with the 'proofs', or texts on which it was founded, and six verses of a hymn or Psalm by heart. A hurried tea at seven in the evening would be followed by more learning. At eight o'clock, the children were summoned by their parents to repeat what they had committed to memory, and would be well scolded for any mistakes. The evening was concluded by the family sitting round the table with each reading a verse of the New Testament in turn, until the six or seven children capable of reading had read as much as the equal of a chapter for each. No family prayers were said, and Combe believed this arose from his father's fear that he could not do justice to so sacred a duty. As no printed prayers were sanctioned by the established Church of Scotland, the children were all ordered to say their prayers privately. Combe's assessment of his religious instructions was that it felt as a heavy addition to the toilsome load of learning unintelligible things which oppressed his existence. Far from cultivating a religious spirit in him, they made the church, Sunday and the Catechism odious.[29]

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[29] Charles Gibbon, *op. cit.*, 37-9.

As he grew in understanding, Combe related how the religious teachings put his mind in great turmoil. In the church, nothing was taught but the Calvinistic dogmas: 'the terrors of the Gospel, the fire that never quenched, ... the worm that never die[d], the sinfulness of sin, the corruption of human heart, and so on'. Combe said how he believed them all and trembled. At home the family never talked of religion: 'It was too awful and painful a subject for us'.[30] Combe summarised his views on the doctrines of original sin, the atonement and the future state held around 1803 as follows:

> the whole world appeared to me to reflect the Fall and the sinfulness of man from every feature. But, then, the consequences were appalling! Some persons were elected to everlasting enjoyment in heaven; many more passed over by God's decree, before they were born, to everlasting torments in hell. I included myself at once in this category; for the doctrine of Christ's having suffered for my sins and purchased my redemption, appeared inconsistent, first with a pre-existing irreversible decree, and, secondly, with benevolence and justice.[31]

Of all the doctrines within Calvinism, Combe seemed to be most troubled by the doctrine of predestination. He recorded how he was made very miserable by a terrible sermon on Election when he was about fourteen. It led him to confide in a childhood friend that he felt certain that he was 'one of those who were destined from all eternity to be passed over to the left hand at the day of judgement'. His friend expressed surprise, and replied, 'The doctrine of Election gives me great joy, for I *feel* that *I* am one of the elect, and that I am sure of salvation'.[32] It was a striking revelation to Combe that anyone could actually be assured of his personal salvation. After he became a phrenologist, Combe explained such a difference in attitude between him and his friend as due to the relative sizes of their mental organs. His friend had Veneration, Hope and Wonder all larger in relation to the organ of Conscientiousness, while in Combe, Conscientiousness was larger than all the other named organs. According to Combe, therefore, if one had Conscientiousness larger than Hope, then one was likely to feel doomed under the doctrine of predestination. On the contrary, if Hope was larger than Conscientiousness, then one would be sure that one belonged to the elect.

In 1819, writing to his brother Andrew of the last hours of their mother,

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[30] Ibid., 40.

[31] Ibid., 39.

[32] Ibid., 42, autobiographical section of Combe; author's italics.

Combe reported how she was pained by the uncertainty of her fate after death. 'Oh, I could bear all this with patience if I were sure of a good place in the world to come,' she said. Combe was by then converted to phrenology, and his indignation against the doctrine of predestination was evident in the closure of his letter to Andrew:

> My heart burns to think that under this strange creed of ours the veriest scoundrel who has Hope large, and Conscientiousness small, should pass through the bed of death full of confidence, while the very excellent of the earth should groan beneath dreadful apprehensions arising from the very faculties which inspired their conduct with virtue.[33]

It would be fair to say that Combe considered phrenology as the force that liberated him from 'the terrors of a lamentable superstition' induced by the doctrine of predestination. To Combe the phrenologist, whether or not one was capable of feeling sure of one's future state bore no relationship to how righteous one was, but was due to the relative size of the mental organs.

Once the doctrine of predestination crumbled under the scrutiny of phrenology, the whole edifice of what Combe called 'doctrinal Christianity' fell apart for him. More specifically, Combe named 'the fall, the atonement, and the doctrine of future rewards and punishments which the orthodox interpretations present[ed] to us as Christianity, as contradicted by known facts in nature and legitimate inductions from them'.[34] To Combe, the Christian religion, as generally professed, was founded on the Fall of Man; which was in contradiction to the religion of nature. He reasoned that 'if the human organism, bodily and mental, has been adapted to external nature such as it now exists, and nature to it, then apparently man never was essentially different from what he now is'.[35] In Combe's view, not only was the Fall unsupportable by the laws of nature, but the doctrine of the Original Sin brought with it many averse consequences:

> By laying down the corruption of human nature as a fundamental proposition in religion, and founding on it the doctrine of man's natural aversion to holiness and virtue; and his natural incapacity to discern Divine truth, the clergy deprive themselves of every resting place in human nature for religion and morality.[36]

In orthodox Reformed, or Calvinist teaching, all men are depraved and

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[33] Letter to Andrew Combe dated 2 July 1819, quoted in Gibbon, *op. cit.*, 121.

[34] Combe, *An Inquiry into Natural Religion*, para 461, 207.

[35] Ibid., para. 409, p.181.

[36] Ibid., para. 435, 192.

warranted eternal punishment; the elect are saved by grace alone, and not by works or faith. But in Combe's understanding (or misconception), personal salvation came '*only* through faith in that atonement', and 'through the influence of the Holy Spirit would the moral taint introduced into man's nature by the Fall be removed, and the punishment due for it and for each individual's actual transgressions' be averted.[37] The doctrine of the Fall therefore necessitated the doctrine of the Atonement. The Fall brought sin into the world, and the second Person of the Trinity, himself God, assumed the form of man, suffered the penalty of that sin, atoned for it, and thereby restored the human race to the favour of God. Future rewards centred on the idea of Heaven, generally alloted to the true believers, who had shown the soundness of faith by good works; while some sects maintained that faith alone sufficed to ensure salvation. Combe's criticism about this doctrine centred on what he considered to be *faith*. In phrenological terms, one's capacity to believe any thing depended on the development and condition of his brain, and the training, and instruction received. 'These conditions are determined chiefly for the individual, and little by him'.[38] Combe did not go further to draw out the implications of his stance, but it would suggest that he considered faith as a psychological outcome of one's phrenological conditions. It followed therefore, that one did not *choose* the faith; but the faith was *chosen* for you, by your brain, training and instruction.

Another criticism Combe had of the doctrine of the Atonement, albeit borne out of misconception of the orthodox Reformed teaching, was the inherent injustice of such a system of salvation, whereby a life of crime and immorality could be wiped away at the death bed by a mere act of confession of faith. In mockery of the injustice in the scheme of future rewards, Combe asserted:

> No spectacle is more common than to see an unhappy individual, after a life of crime, which society regards as flagrant that his existence can no longer be tolerated on earth, assured by his spiritual guides that his repentance in prison, accompanied by unhesitating faith in the atonement of Jesus Christ, will prove sufficient to transmit his soul from the gallows to heaven, where he will enjoy through eternity the society of God, the angels, and just men made perfect.[39]

On the other hand, Hell was generally assigned to unbelievers, mis-believers and evil-doers. To Combe, erroneous beliefs and evil deeds arose chiefly from 'a

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[37] ibid., para. 410, 181.

[38] Ibid., para. 414, 181.

[39] Ibid., para. 414, 181.

deficient or an ill-proportioned development, or an unfavourable constitution of the brain, or from these combined with deficient training and instruction'. To consign individuals thus constituted to eternal misery for conduct which was the natural result of their faculties and circumstances, appeared to Combe to be 'at variance with benevolence and justice'. Similarly, 'to assure them of heaven as the result of a prison-inspired repentance and belief, seem[ed] to be equally opposed to all sound views of a moral government of the world here and hereafter'.[40] Combe strongly advocated prison reforms based on his belief that the propensity to vice, crime and sin was a misfortune in one's natural endowments: 'The evils are generally inherited, and not voluntarily selected by individuals'; and the fear of hell would not appal men with a lower development of brain. Combe therefore saw punishment, be it in this life in prison or in the after life in hell, as 'at variance with benevolence and justice'. To Combe, the remedy for the propensity to vice and crime must be the removal of the causes rather than punitive measures. Finally, Combe maintained that the idea of hell was unsupported by evidence from natural religion, which should bring deliverance 'from the horrors of hell; for no traces of hell or the devil' were to be found in nature.

If the doctrine of future rewards and punishment associated with the idea of heaven and hell was rejected, did Combe reject immortality as well? Before the question of immortality can be discussed, Combe's views of mind and matter have to be first related. In *An Inquiry of Natural Religion*, Combe demonstrated he was fully conversant with the physiological theories of life that had caused so much controversy in the Lawrence episode. He rehearsed the two hypotheses of life that were in currency in 1853. The first assumed that the *vital principle*, of an unknown element, combined with the chemical elements of the human organism to form life; at death, the vital force escaped leaving the chemical elements as residue. The second hypothesis dispensed with a vital principle as a force distinct from matter and considered that life was a complicated action of the common properties of matter. Writing in 1853, Combe reported that the first hypothesis was upheld as true in popular belief, and that 'the unknown element added to the chemical elements to produce life [was] assumed to be an immaterial mind or soul'.[41] Consciousness was referred to as evidence of this immaterial element. Combe was aware that the belief

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[40] Ibid., para. 415, 182.

[41] Ibid., para. 387, 171.

in immortality hinged on the immateriality of the vital principle, in the form of the mind or the soul, surviving the bodily decay at death.

> The grand recommendation of [the first] hypothesis to popular acceptance is, that it is supposed to prove our immortality. Soul, mind, or spirit, it is argued, not being matter, is indestructible, and must endure for ever; it being distinct from matter, death is merely its separation from the body. [42]

However, he argued that 'if this doctrine be sound, then we must allow souls, or spirits, to the dog, elephant, and ass, as well as to man; because they think and feel, and their brains appear to be composed of the identical elements which constitute the brain in him'. Combe did not draw out the implication of such assertion in *An Inquiry into Natural Religion*, but the implication of ascribing souls to brutes, as John Wesley did, would be to grant animals the prospects of immortality as well. This position was clearly inconsistent with the corollary belief of immortality being the distinct gift to man alone.

Combe endorsed the second hypothesis of life, which in turn caused his views on mind and matter to depart from the conventional beliefs in two significant ways. First of all, instead of considering mind as an immaterial principle superadded onto the physical brain, Combe stated that mind was the *name* given to 'the result of a series of acts of the brain'. To Combe, 'the mind stands in the same relation to the brain as digestion does to the abdominal viscera', with digestion being the *name* given to the result of a series of acts of the stomach and its assisting organs.[43] In this respect, Combe was almost echoing the French physiologist, Cabanis' famous (or infamous) analogy between the mind and the digestive system, by stating that the brain 'digests' impressions as the stomach digests food.[44] The physical basis of the mind in the brain was the indisputable point for Combe: 'The only points certainly known are, that in this life mind is never manifested without brain; thought and feeling were functions performed by nervous matter placed in certain circumstances'.[45] While Combe firmly identified the mind *with* the brain, he did not go so far as identifying the mind *as* the brain. As early as 1826 when Combe was penning *Outlines of Phrenology*, he indicated his awareness of the quintessential difficulty arising from a monistic position; that is, how the gap between a material

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[42] Ibid., para. 387, 171.

[43] Ibid., para. 387, 171.

[44] See Alan Richardson, *British Romanticism and the Science of the Mind* (Cambridge, 2001), 17.

[45] Combe, *Outlines of Phrenology*, 33.

brain and the emergence of consciousness was to be bridged.

> The brain, whether in life or after death, presents nothing to our contemplation but a mass of matter, of a soft and fibrous texture, in which no thought can be discerned and no sentiment can be perceived, and in which no spirit or immaterial substance can be traced.[46]

Combe did not attempt to bridge the gap, but was content with the position that: 'if God has made the brain to think, we may rest assured that it is exquisitely and perfectly adapted for this purpose'. In other words, if 'medullary matter thinks,' then it must be the best possible substance for thinking.

Combe was aware that the corollary of anchoring the mind in the brain was to reduce the distinction between man and animals. The popular view maintained that man was distinct from the animals by virtue of his endowment of an *immaterial* mind. Combe asserted that the crucial difference between man and animals lay in the variations of the form and size of their brains.

> In [the animals] the form and size of the brain differ from those in man, and they and we arise in the scale of intelligence and emotional power in proportion as the parts of our cerebral masses are augmented in number and size.[47]

Instead of seeing man as totally distinct from the animals, Combe saw man as different from the animals by degrees, not in absolute terms. However, Combe positively affirmed man's superiority over the animals, asserting man as 'designed for another and a higher destiny than that which was allotted to [the animals], whatever be the *substance* of which his mind [was] composed'.[48] For Combe, 'no idea can be more erroneous than that which supposes the dignity and destiny of man to depend, of necessity, on the substance of which he is made'.[49] He argued that 'man [had] received higher organs than any of the other creatures, this latter endowment render[ed] man a distinct being from all the other inhabitants of this globe, and constitute[ed] the race improvable'.[50] For his contemporaries though, not only was the foundational belief of immortality as based on an immaterial mind jeopardised, but that the distinction between man and the animals could also be eroded, by making a close identification between the mind and the brain. Combe

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[46] Ibid., 33.

[47] Combe, *An Inquiry into Natural Religion*, para. 388, 172.

[48] Combe, *Outlines of Phrenology*, 33.

[49] Ibid., 33.

[50] Combe, *An Inquiry into Natural Religion*, para. 453, 205.

was fully aware of the inflammatory nature of his views contained in *An Inquiry of Natural Religion*, and that was why the work was only intended for posthumous publication.

If Combe's views of the mind and man's place in creation were audacious, his views on matter were equally controversial. While most of his contemporaries held matter to be *destructible* and believed that immortality could not therefore come from a material medium, Combe expressed his contrary opinions as:

> there is no evidence that *matter* is destructible; and if immortality must depend on the essence or substance of the thinking power being indestructible, matter, as something of which we have experience, and which really seems to us to be indestructible, will afford a firmer basis for our hopes than a purely assumed existence of something unknown and incomprehensible called spirit.[51]

Combe's basis for any hopes of immortality therefore rested on matter rather than on an immaterial soul, claiming that 'a reconstruction of the human organism [did] not seem to be impossible'.[52] In this respect, Combe's position was reminiscent of Priestley's views on matter discussed earlier. While Priestley believed that a future life would come through the Christian doctrine of resurrection as a *reconstruction* of the material body, Combe did not make any explicit link between resurrection and the reconstruction of matter. Combe readily admitted that 'Natural Religion [threw] us exclusively on the bounty of God for our hopes of a future life',[53] but he did not speculate on how this future life would come into existence or whether these hopes of a future life would be realised. The only clear conclusion Combe made in respect of materiality and immortality was:

> As this Power and Intelligence called us into existence, bestowed on us the qualities we possess...we may legitimately infer that we now exist in fulfilment of his design; that we shall exist until that design, whatever it may be, shall be completed; and that hence it is altogether irrational in us to fear that his object may be defeated in consequence of having chosen a wrong substance out of which to fashion us. The question of Materialism, therefore, in relation to immortality, appears to be one which we cannot solve, and in itself to be of no practical importance to our future destiny.[54]

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[51] Ibid., para. 387, 172.

[52] Ibid., para. 413, 181.

[53] Ibid., para. 416, 183.

[54] Ibid., para. 390, 173.

By the time Combe wrote *An Inquiry into Natural Religion* in 1853, he was able to report that:

> the opinion is now very general among thinking man, that the question of immortality has no dependence on that of the immateriality of the soul and possibility of its separate existence, but that whatever the nature of the soul is, it can be immortal or mortal only by the will of God.[55]

However, the opinion of the thinking man was not representative of the general public, nor did the Church advance to incorporate new knowledge in the life sciences. Combe confessed that he had frequently received communications from 'young men of talent and unexceptionable morality', who had stopped short in their clerical studies 'from a conviction that the doctrines which they were called on to believe and to teach could not stand the test of honest examination'.[56] Combe was unsparing in his criticism about the Church's teaching, her interpretation of the Bible and the role of the clergy:

> What has been taught as the Christian religion, is not the religions of Jesus Christ, simply as he delivered it; but creeds, and confessions, and catechisms, concocted by semi-barbarous men from isolated texts, drawn often with unscrupulous irrelevancy and daring from all parts of Scripture.[57]

In the final analysis, it was the 'doctrinal interpretations of the Bible' that was at the core of Combe's criticism of Christianity as professed by the established national churches. Combe used the term 'doctrinal Christianity' to denote the system of Christian beliefs based on doctrines, such as the Fall and the Atonement, which were derived from certain interpretations of the Bible. To Combe, nearly all that passed in the world for Christian faith really consisted of a 'system of doctrines founded upon particular texts, interpreted in a particular manner, by particular individuals or conclaves of men; and in point of fact, the Bible contain[ed] no systematic exposition of religious doctrine which all men must necessarily acknowledge as Divine revelation'.[58] Combe's critique of doctrinal Christianity showed his insight into the impending clash between science and religion that was to follow in a major way by Darwin's *The Origin of Species*:

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[55] Ibid., para. 10, 4.

[56] Ibid., para. 428, 188.

[57] Ibid., para. 438, 196-7.

[58] Ibid., para. 423, 185.

> there is a source of weakness in doctrinal Christianity which is not yet generally perceived, but which will become more apparent in proportion as a knowledge of nature penetrates into the public mind. It stands exclusively on a supernatural basis, and can neither advance with the knowledge of nature, nor be amalgamated with the forces and adaptations by which God conducts the government of the natural world, both physical and moral.[59]

Another major weakness of doctrinal Christianity, according to Combe, was that it allowed the clergy 'to hold sway over the laity'. It gave the clergy the temporal power 'to substitute their own doctrines for the order of nature in the instruction of people,' and 'to prevent the public mind from entering honestly and independently into the consideration of many departments of natural science'.[60]

There was no doubt by the time *An Inquiry into Natural Religion* was written in 1853, Combe's departure from doctrinal Christianity in belief and practice was well established. If 1816 marked his conversion to phrenology, evidence would suggest that by the time *Constitution of Man* was published in 1828, Combe had already rejected the Calvinistic doctrines he was brought up with. An entry dated 1 September 1828 in one of his private journals recorded this departure from doctrinal Christianity and the adoption of the 'principles for true religion' as formulated in *The Constitution of Man*. The following paragraphs offered a palpable record of this shifting in his religious beliefs, as if the pieces of mental furniture related to Calvinism were thrown out one by one to make room for the new creed contained in *The Constitution of Man*:

> What is the end of religion? To obtain salvation will be the common answer. How is salvation to be obtained? By faith in Jesus Christ, and by practising morality, as at once the evidence and result of that faith. What is salvation? Deliverance from God's wrath and curse, to which we are exposed on account of original sin and actual transgression; and being made partakers, through grace, of eternal felicity in heaven. These ends, then, are purely selfish. Punishment is an object of fear, on account of its painful and distressing nature; eternal happiness in heaven is an object of desire, as implying the highest gratification.

After reciting the doctrines that he was rejecting, Combe proceeded to give the reasons of his rejection:

> It is impossible to love a Being whom we fear; and habitual consciousness to liability to eternal misery enslaves the mind, and

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[59] Ibid., para. 425, 187.

[60] Ibid., para. 417, 183.

> renders it unfit to entertain generous emotions. The desire of heaven may be elevating or degrading, according to the notions formed of the state of being to be realised there ... The practical effect, then, of any particular religion will be good or bad according as it maintains the higher or the lower faculties in habitual activity. Fear maintains Cautiousness, but it chills Benevolence, Veneration, Hope, Conscientiousness, and Intellect. The desire of heaven, if a mere abstract undefined aspiration after happiness, will cherish a dreamy, imaginative frame of mind, much more allied to selfishness and superstition than to practical holiness and virtue.[61]

By the time *The Constitution of Man* was published, Combe was no longer a Christian in the conventional sense. He no longer subscribed to a set of key doctrines as stated in the Westminster Confession and taught by the Catechism; nor did he owe allegiance to an established national church, like the Church of Scotland. His religious affinity could probably be described as an advanced 'Broad Church' position; and his religious beliefs consisted of a new creed based on natural laws.

III

The new creed, which to all intents and purposes, became Combe's new religion, was explicated in *The Constitution of Man*. In places, the language employed was reminiscent of the Catechism, and the tone of the text was deeply religious, as when Combe was setting out the purpose of God in creating Man:

> God exists: He created man that he might be happy. Man can be happy only by exercising all his faculties under the supremacy of moral sentiment and intellect. Religion, therefore, consists in seeking to discover and obey the divine laws, from conviction that they alone are suited to gratify all our faculties.[62]

But the 'true principles of religion', if inspired by phrenology, was not without traces of the old religion that Combe was shifting out. It is most interesting to note how the concept of *divine pre-ordainment* developed in *The Constitution of Man*. It is a term used by Combe to refer to the laws of nature within the moral universe, which were in every way as 'natural and inevitable' as the laws of nature governing the physical universe. The object of *The Constitution of Man* was to demonstrate that 'to the infringement of *every* natural law [was] attached a pre-ordained natural consequence,

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[61] Quoted in Charles Gibbon, *op. cit.*, I: 223-4.

[62] Ibid., I: 225.

which Man [could] neither alter nor evade'.[63] It would not be far-fetched to suggest that Combe's concept of pre-ordainment came from the raiment of the doctrine of pre-election that he had rejected, as if he could not totally cast off the concept of some form of divine prescription.

In *The Constitution of Man*, Combe distinguished two senses of 'the laws of nature' as follows:

> The former is the sense in which it is employed by the physiologist and the natural philosopher; the latter, that in which it is most commonly used by the jurist and the moralist. To speak of 'obeying' or 'disobeying' a natural law in the latter sense of the phrase, is to speak literally and with precision; but to speak of 'obeying' or 'disobeying' a natural law in the former sense (as, for instance, the law of gravitation) is to say in a *figurative* manner that we adapt, or fail to adapt, our conduct to the fixed order and modes of action of things.[64]

Combe saw himself as writing about the laws of nature as a physiologist or a natural philosopher, and the laws he was expounding were on *a par* with the law of gravitation. One has no choice but to be subject to the law of gravitation; and therefore disobedience has no meaning with reference to choice. To disobey the law of gravitation means, *figuratively* speaking, to fail to adapt. To expect no injuries by jumping off from a great height is an instance of failing to adapt to the law of gravity. In *The Constitution of Man*, Combe was attempting to lay down a system of natural laws governing the physical and moral aspects of man in the same manner as gravity governs our motion. Combe asserted that there was nothing inscrutable if the most pious and benevolent missionaries embarking on their mission in an unsound ship should be drowned, while the 'greatest monsters of iniquity' survived in 'their staunch and strong vessel', if the physical laws were taken into account. Likewise, if a morally depraved man endowed with a sound bodily constitution, observed the rules of temperance and exercise and enjoyed longevity, it was the consequence of the operation of natural laws. A man with a feeble constitution who disregarded the laws of diet and exercise might be a paragon of Christian virtues, but he would still

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[63] Combe, *The Constitution of Man*, 23.

[64] Ibid., 19.

suffer pain and sickness. With justification, the Swedish translation of *The Constitution of Man* was entitled 'The Doctrine of Happiness on Earth'.[65]

To a large extent, *The Constitution of Man* was Combe's treatise of God's prescriptions instituted in the laws of nature for the physical and moral welfare of man. Drawing parallels between the laws that governed the physical universe and the laws that governed the moral universe, Combe stressed the *independent operation* of these natural laws. By *independence*, Combe probably meant that they were even independent of God; in the sense that once the laws in both the physical and moral universe had been instituted by the Divine Mind, they operated independent of God. Certain actions would *inevitably* lead to certain consequences, because the cause and effect were *'pre-ordained by the Divine Mind* for a purpose'.[66] That purpose, continued Combe, appeared to be 'to deter intelligent beings from infringing the laws instituted by God for their welfare, and to preserve order in the world'. Pre-ordainment therefore carried with it the element of inevitability and inflexibility. While the inevitable and inflexible nature of the laws governing the physical universe was more readily adhered to, Combe laboured over the parallels between the moral and physical realms. He was at pains to point out that it was the same degree of inevitability and inflexibility with the laws that governed the moral universe as with the laws that governed the physical universe, even though such a fundamental premise was not readily conceded to:

> In considering *moral* actions ... the public mind leaves out of view *the natural and inevitable.* Being accustomed to regard human punishment as arbitrary, and capable of abeyance or alteration, it views in the same light the inflictions asserted to take place under the natural moral law, and does not perceive *Divine pre-ordainment and purpose* in the natural consequences of such moral actions.[67]

Combe reasoned that it was the arbitrary nature of human punishment that had blinded us to the absolute nature of those natural laws that governed our moral actions. Combe stated that 'the great object [he] had in view' in writing *The Constitution of Man* was 'to show that this notion [was] erroneous, and that to the

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[65] Combe, *Testimonials on behalf of George Combe* (Edinburgh, 1836), 74. The translation appeared in 1833, and was by Monsieur G M Schwartz, Directeur en Chef du Control de Science à Stockholm, Membre de l'Academie des Sciences.

[66] Combe, *The Constitution of Man*, 23; author's italics.

[67] Ibid., 23; author's italics.

infringement of *every* natural law there is attached a pre-ordained natural consequence, which Man can neither alter nor evade'.[68]

Another feature reminiscent of the doctrine of predestination contained in the principle of pre-ordainment was the degree of determinism in existence prior to birth. In *On the Relation between Science and Religion*, Combe stated his opinion on the importance of the constitutional qualities of the stock from which one was descended.

> human happiness and misery depend more upon the constitutions of body and brain communicated prior to birth than upon all other causes put together. Where these are radically defective and unsound, physical pain, mental imbecility, impulsive and irresistible desires, torpid inactivity, or insanity with all its deep afflictions, are the unhappy characteristics of the individual.[69]

It was not surprising that one of the most rehearsed comments about phrenology was that it promoted moral determinism. It was the chief metaphysical objection William Hamilton raised against phrenology. If Combe had found the doctrine of pre-destination oppressive, what did he gain by trading Calvinism in for phrenology, which seemed to preach only a different creed of pre-determinism before birth? If everything was pre-ordained, where did free will exist? If there was no free will, how could man be responsible for his action? If determinism was the ultimate stance of phrenology, what was the point of writing *The Constitution of Man* as a manual for self-improvement? Neither would it explain the amount of time and energy Combe devoted to the promotion of education and prison reforms in his later career.

It would appear that Combe was fully aware of the deterministic implications of his new religion, and had attempted to address the issue in a paper delivered in 1826 to the Phrenological Society, entitled *Essay on Human Responsibility as Affected by Phrenology*. Combe admitted from the outset that he had omitted the subject of Will and Responsibility since 1819, when he published his *Essays on Phrenology*. It was obvious to him 'that if necessity were demonstrable by argument, Responsibility was certain as a *fact*; and how to reconcile them, was a problem which for years' he was unable to solve. It is significant that Combe set out to solve the problem of necessity, free will, and human responsibility before writing *The Constitution of Man*. It was as if he needed to resolve the difficulty of necessity

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[68] Ibid., 23.

[69] Combe, *On the Relation between Science and Religion*, 121.

and free will before he could fully develop the principle of divine pre-ordainment in nature in *The Constitution of Man*.

In *Essay on Human Responsibility as Affected by Phrenology*, Combe defined human action as 'the consequences of Will', and 'Will is the result of the strongest desire sanctioned by intellect, and desires arise from the activity of the faculties, and this activity springs from either internal or external excitement'.[70] Combe reasoned that since desire always preceded Will, and that 'the feeling of freedom arose entirely from the existence of the desire', it was therefore impossible, 'from the nature of things, that we [could] even feel the Will otherwise than as free'.[71] Furthermore, Combe argued that the sequence of events leading to human action stemmed from some internal or external stimuli, which caused desires to arise. The intensity of each desire was in proportion to the size and activity of the organ; hence, the natural development of the brain was 'the grand source of desire'.[72] Combe probably envisaged that the intellect would referee amongst the desires, and 'the strongest desire sanctioned by intellect' resulted in what he understood as Will. Will could be nothing other than 'free' in such an analysis. In this regard, Combe quoted Jonathan Edwards, who claimed philosophy proved, by demonstration:

> The predominance of motives, and the conclusion of moral necessity is inevitable; nevertheless it is every moment refuted by consciousness; for we have the irresistible conviction that we are free; -- we feel that our will is free, and this refutes and sets our philosophy at nought.[73]

It would appear that Combe concluded any debate on the existence of free will as an objective reality was a fruitless task. Subjectively, in the way human action was originated and resulted, free will remained an irresistible conviction – 'we feel that our will is free'. In this respect, Combe was actually in full agreement with the Scottish common-sense philosophers. From Thomas Reid to William Hamilton, the basis of their assertion that man was a free agent was none other than that our

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[70] Combe, *Essay on Human Responsibility as Affected by Phrenology* (Edinburgh, 1826), 7.

[71] Ibid., 10.

[72] Ibid., 5.

[73] Ibid., 8. Combe admitted in the paper that he had omitted the subject of Will and Responsibility since 1819, when he published his *Essays on Phrenology*. It was obvious to him 'that if necessity were demonstrable by argument, Responsibility was certain as a *fact*; and how to reconcile them, was a problem which for years' he was unable to solve. (See Combe, *Essays on Human Responsibility as Affected by Phrenology* (Edinburgh, 1826), 1.)

irresistible conviction – 'we feel that our will is free'; it was the argument by Common Sense rehearsed.

From discussing what he thought Will was, Combe progressed on to discussing what he called, 'the doctrine of Responsibility'. He declared the general perception that 'without Free-Will there can be no Responsibility' was a 'fundamental error', but without giving any further explanation. However, interpreting the statement in the context of the whole essay, Combe was probably rejecting the conventional notion that responsibility originated from *within*, as a consequence of the exercise of free will. Instead, Combe tried to establish that human responsibility originated from *without*, in the physical and moral laws instituted by the Creator. Physical responsibility consisted of observing those physical laws of the universe; the enforcement of which was so rigid that even ignorance would not exempt us from their consequences. For instance, fire could bring immense blessings and benefits but could also cause indescribable damage; and the employment of fire carried with it physical responsibility. In Combe's scheme, the moral laws were as unbending as the physical, and imposed on us responsibility from without that we could not evade.

Paradoxically, the framework of moral conduct and consequences prescribed by *The Constitution of Man* might appear to promote moral determinism, but in fact, it offered scope for Combe to believe that an individual, to ascertain extent, could influence the outcome of his own end. The crucial difference for Combe was that with the doctrine of predestination, he could not be sure of his salvation and felt sure that he was doomed. Furthermore, under predestination, he felt he could do nothing to change the outcome concerning his personal salvation pre-determined before his birth. By comparison, the concept of divine pre-ordainment in nature offered Combe the comfort of certitude that by his obedience to the natural laws in the physical and moral realms, he could 'choose' the outcome. The corollary of replacing the doctrine of predestination with his doctrine of pre-ordainment was to change the mechanism whereby personal salvation was to be effected. Under predestination, salvation was effected by Christ's atoning act on the cross and determined by the will of God. Under pre-ordainment, salvation came from the individual's decision to adapt to the natural laws divinely prescribed.

In *An Inquiry into Natural Religion*, Combe drew the conclusion that 'the only way in which we can serve God, is by acting in conformity with His will; and

His will may be discovered by us by observing and reflecting on His works'.[74] Phrenology was the fruit of such observations and reflections of the divine laws of nature that would assist one on the course of self-improvement. 'The discovery of the functions of the brain, and the means by which its constitution and development may be rendered more and more perfect', enabled man to improve all mental capacities'.[75]. The brain was indisputably the prime medium for such self-improvement. Knowledge through education was the means for effecting such improvement.

Within the phrenological system, the expression of different mental faculties and sentiments were correlated with different parts of the human brain. These faculties and sentiments were broadly divided into two orders: the *Affective* and the *Intellectual.* The Affective order was further divided into two Genera: *propensities* and *sentiments*; and the Intellectual order, into three Genera: the *external senses*, the *perceptive* and the *reflective.* Located at the bottom and at the back of the brain were the propensities man had in common with the animals; for example, 'Adhesiveness' (the tendency to live in communities), 'Combativeness', 'Destructiveness', 'Acquisitiveness' and 'Amativeness' (sexual feelings). Propensities were what gave rise to primitive instincts, and were distinguished from sentiments. All the sentiments were further sub-divided into two categories. The first category of sentiments was common to man and the lower animals and they were: 'Self-esteem', 'Love of approbation' 'Benevolence' and 'Cautiousness'. The second category of sentiments were proper only to man, and they were: 'Veneration', 'Firmness' (determination to do good), 'Conscientiousness' (duty or gratitude), 'Hope', Wonder, 'Ideality' (inspiration, imagination), 'Wit' and 'Imitation'.

The second order of faculties had three genera. The first genus comprised of the five senses that man and animals had in common and allow them to communicate with the external world. The second genus comprised of the *perceptive* or *knowing* faculties for taking cognizance of the existence, qualities and relations of external objects, and they were: 'Individuality', 'Form', 'Size', 'Weight', 'Colouring', 'Locality', 'Number', 'Order', 'Eventuality', 'Time', 'Tune' and 'Language'. The third genus comprised of the *reflective* faculties, and they were: 'Comparison', and 'Causality' (the ability to perceive the dependency of phenomena and to trace

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[74] Combe, *An Inquiry into Natural Religion*, para 458, 206.

[75] Ibid., para. 457, 206.

motives and the first cause). The manifestation of power by each faculty was determined by its size and condition, and the phrenologists were at pains to point out that it was the relative, not the absolute, size of each faculty within the person that would determine the predominant traits in his personality and abilities. For example, as related earlier, 'the veriest scoundrel with Hope large, and Conscientiousness small' would pass through the bed of death full of confidence, while the very excellent, with Conscientiousness large and Hope small, would groan beneath dreadful apprehensions arising from the very faculties which inspired their conduct with virtue.[76] Or, if Veneration and Hope were large while Conscientiousness and Benevolence small, the individual was likely to prefer the pomp and rituals of religious worship to the practice of charity and justice.

Given that it was one of the fundamental principles in phrenology that 'the human faculties acted with a degree of energy corresponding to the size of their organs,'[77] to influence the size of certain organs would therefore affect the relative manifestation of the faculties. In *On the Relation between Science and Religion*, Combe posed the question, 'Is man capable of exerting any influence over the size and condition of the brain?' He claimed the answer must be in the affirmative, and that our power in this department would be 'found equal to, probably greater than, our influence over inorganic substances and agencies'.[78] To claim that the condition and size of the brain could be influenced to the same, or even greater, extent than over inorganic substances betrayed the firm materialistic basis upon which Combe based his view of the brain. 'The brain is the material instrument by means of which the mind acts, and it consists of a variety of parts, each connected with a special mental power'; and therefore 'the brain is subject to the same organic laws as the other parts of the body', asserted Combe.[79] In a similar manner as the physical constitution of the human body could be improved by exercise, temperance, diet and hygiene. The size and condition of the brain could be enhanced by mental training through education. Such a claim was entirely consistent with Combe's belief that the mind was not an immaterial, ephemeral entity, but was solidly anchored in a material brain.

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[76] Combe, *Outlines of Phrenology* (Edinburgh, 9th edn. 1854), 1-30.

[77] Combe, *On the Relation between Science and Religion*, 43.

[78] Ibid., 117.

[79] Ibid.,.41.

The phrenologists believed that the organs of the animal propensities were generally large and naturally powerful to ensure survival. It was the moral and intellectual organs that required artificial cultivation to enable them to regulate the lower propensities. If the doctrine of pre-ordainment as manifested in natural laws was the new creed supplanting the doctrine of predestination in doctrinal Christianity, education was the new mechanism to effect personal salvation in place of the theory of atonement. In his lectures on popular education, Combe laid down the need of education as:

> the moral and intellectual organs, in most individuals, when combined, although equal or superior in size to those of the propensities, stand more in need of artificial cultivation. Their function is to control and direct the animal feelings and desires, and they need to be instructed and strengthened themselves to fit them to accomplish this duty.[80]

Combe laboured over making the distinction between *instruction* and *training*; and that education should embrace both. To Combe, instruction meant 'communicating knowledge', and training implied 'the repetition of certain modes of action in the mind and body until they [had] become habits'. To teach a child to repeat the precepts and doctrines of the New Testament was mere instruction; and the child was not 'trained' in religion and morality until he became accustomed to practise these precepts in his daily conduct.[81] The answer to the question whether the condition and size of the brain could be improved was therefore answered by Combe's belief that:

> It is a law of our constitution that any organ, when accustomed to repeat frequently its action, acquires additional strength and facility in doing so; and the force and advantages of habit arise from this law.[82]

If education was the mechanism of salvation in Combe's new gospel, it was not surprising that after penning *The Constitution of Man*, Combe turned his attention increasingly to promoting education reforms based on his phrenological principles. He even alluded to the Scripture to support his point on training: '*Train* up a child in the way in which he should go, and when he is old, he will not depart from it'. He claimed therefore that in this respect, scripture and nature were in agreement. Despite the element of determinism that appeared inherent in the doctrine of pre-

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[80] Combe, *Lectures on Popular Education, delivered to the Edinburgh Philosophical Association in April and November 1833* (1833, 3rd edn., 1848), 42.

[81] Combe, *On the Relation between Science and Religion*, 41-2.

[82] Combe, *The Constitution of Man*, 35.

ordainment, in practice, Combe was a devout believer in the role of education in influencing the condition of one's own mental constitution as given at birth. To this extent, his moral philosophy was not deterministic. In the moral universe constructed under his doctrine of pre-ordainment, Combe allowed for an element of free will which brought with it responsibility and duty, for the individuals and society as a whole.

Moral Philosophy, the sequel to *The Constitution of Man,* was written to illustrate how 'the principles of human nature' developed in *Constitution of Man*, might be applied to the 'conduct of life – by man as an individual, and as a domestic, a social, and a religious being'. *Moral Philosophy* was the collection of twenty lectures originally delivered in 1832 to 'an Association formed by the industrious classes of Edinburgh for obtaining instruction in useful and entertaining knowledge'.[83] To an impressively large audience of some five to six hundred men and women, Combe stated unequivocally that 'obedience to every natural law [was] a positive *duty* imposed on us by the Creator, and that infringement or neglect of it [was] a *sin* or transgression against His will'.[84] Knowledge of God's will and laws as revealed in nature was essential in discharging this duty and avoiding transgression. It followed therefore that 'the gaining of knowledge [was] a *moral* duty'; and that it was 'the office of the divines to instruct in the duties prescribed in the Bible, and of philosophers to teach the department of nature'[85]. The religious overtone of the terms used by Combe, like 'moral duty', 'sin', and 'transgression', would not have been missed by his immediate audience in 1832. The terminology was also suggestive of Combe's orientation that while he had rejected doctrinal Christianity, he had not departed from a deistic religion. Throughout his series of

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[83] See Preface of Combe's *Moral Philosophy* (Edinburgh, 1893), v. This association was the predecessor of the 'Edinburgh Association for procuring Instruction in Useful and Entertaining Science', founded on 29 October 1834. According to Henry Cockburn: 'This and similar institutions were strongly characteristic of the times. It is a sort of popular unendowed college, where lectures are given to all, male and female. .. The lectures are on botany, geology, phrenology and education. They drew in 1832 about £720 from 400 or 500 regular pupils, and had nearly 3000 visitors at 6d. each night.... It is a very useful establishment, giving respectable discourses very cheaply to a class of persons for whose scientific instruction and amusement there is no other provision.' George Combe was 'their genius, and consequently phrenology is a favourite and most productive branch.' See Henry Cockburn, *Journal of Henry Cockburn, 1831-1834*, 2 vols. (Edinburgh, 1874), 73-4. The Association was a typical example of such institutions founded to cater for the needs of the lower middle classes and the more self-motivated workers who patronised the Mechanics Institutes springing up all over Britain in this period.

[84] Combe, *Moral Philosophy*, 32; author's italics.

[85] Ibid.,33..

lectures, God was referred to as 'the Creator', 'the Lawgiver', 'Divine Ruler'. Combe also insisted that the Divine mind, and will, and government were revealed in Nature, reiterating the tradition of natural theology into which Combe was trying to shape his philosophy. What Combe was attempting to illustrate was that there evinced the same degree of design, and of the presence of a Divine Mind, in the order of the moral universe just as it was in the physical universe.

IV

Combe's new gospel did not stop with the message of personal salvation. In *An Inquiry of Natural Religion*, Combe was explicit in his criticism of established religion as offering 'the consolation of religion in our suffering from evil, without enabling us to remove the cause of the evil'.[86] Such criticism is reminiscent of Karl Marx's indictment of Christianity, that it opiates the religious poor without removing their plight. The tides of working-class agitation that coalesced into Chartism in Britain in the second quarter of the nineteenth century, and the wave of revolutions that swept across Europe in 1848 would not have been far from Combe's mind when he penned *An Inquiry* in 1853. Combe's religion had a social dimension that sought to improve life on earth. It is beyond the scope of the present essay to relate in detail Combe's social programmes. As illustrations, we will look in brief at Combe's application of phrenology in the areas of politics, and social and penal reforms.

In *Moral Philosophy*, Combe stated the principles underpinning the relationship between the rulers and the subjects as:

> Rulers and subjects are all equally men, and are equally placed under the Divine laws; and as these proclaim the obligation on each of us to do to others as we would have them to do unto us, and to love our neighbours as ourselves, the notion of *right* in any one man, or class of men, to rule for their own pleasure or advantage over their neighbours, against their inclination and inconsistently with their welfare, is utterly excluded.[87]

The Christian precept of loving our neighbours as ourselves, and the echo of Paine's *Rights of Man* can be discerned in Combe's principles. Improvement for government would take the form of moving towards *independence* and *liberty*. By *independence*,

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[86] Combe, *An Enquiry of Natural Religion*, para. 461, p.207.

[87] See Combe, *Moral Philosophy*, Lecture xvi, 178-187, 180.

Combe meant not being governed by a foreign power; by *liberty*, he meant the nation owned no superior on earth, and every individual was protected by laws in his person, his property, and privileges not only against the aggressions of his neighbours, but against the government itself. The only obligation incumbent on the subject towards the State was to obey the laws; and the only form of government founded by the dictates of natural laws, was that which flowed from the subjects, and was exercised directly for their benefit. Combe forewarned that political improvement would be slow and gradual because pure and moral institutions could not flourish and produce their legitimate fruits unless the people for whom they were intended possessed corresponding moral and intellectual qualities. He concluded therefore that there could be 'no real freedom without prevalent intelligence and morality among the body of the people'. How could intelligence and morality be promoted among the people then? Combe's answer was:

> These can be introduced only by education and training; but the general diffusion of property, by giving a direct interest to numerous individuals in the maintenance of justice, greatly promotes the progress of morality. Hence, public enlightenment, morality, and wealth constitute the grand basis of freedom.

In other words, to arrive at enlightened governments, the people as individuals would have to be enlightened first, by education and training, which brought us back to the first precept of Combe that self-improvement was the first and foremost duty of every individual to his Creator.

Consistent with his view of an enlightened government being *independent* and *liberal*, Combe was critical of British colonial expansion. In a series of letters in February 1858 to the Editor of the *Scotsman*, Combe, calling himself a great heretic, decried British conquest of India as 'a blunder' and 'a crime'. His language was direct and his arguments lucid:

> In India we are conquerors. ... The people are ruled by men aliens in race, in religion, and in language. No arguments will persuade me that this can be *acceptable* to the natives of India; for the feeling of patriotism or love of national independence is indestructible.[88]

Ideological reasons aside, Combe also argued against the rule of India on economic grounds. For instance, he described the profit on our [not clear if he meant British or Scottish] trade with India as 'a bagatelle in the profits of England's trade', and that the profit might be had even if the British were not conquerors. But so long as the

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[88] Combe, *Letter to the Editor of the Scotsman*, dated 10th February 1858.

British continued to rule India by the sword, the Indian revenues had to cover the cost of maintaining the dominion. With the Catholic Emancipation crisis dominating much of the political landscape in the second quarter of the nineteenth century, Combe drew a pertinent and almost prophetic analogy between the conquest of Ireland and India:

> All conquests that have ended in good have been those in which the dominant power laid aside its exclusive pretensions, and amalgamated with the vanquished, and raised all to equal rights. This was England's case after the Norman Conquest; and Ireland, while ruled as a conquest, was a curse to England. India cannot be held by amalgamation; and in proportion as we enlighten and civilise the natives, we shall awaken their feelings of patriotism, deepen their sense of degradation, and prepare them for rebellion.[89]

On another highly political issue, that of slavery, Combe appeared to have thought extensively on the political and moral implications of the practice. In his reply to M. B. Sampson's 15-page long letter on 2 December 1844, Combe observed that 'to restore the negroes to Africa is not to fill to them the measure of justice in compensation for their wrongs'. Combe believed in giving the negroes the right to choose, stating that 'if a fair and full atonement, such as God, or a disinterested just and benevolent man, would pronounce to be adequate, were offered, the Americans would have the right to hold out to the negro any alternative they saw proper, leaving to him to select the atonement, which is his full measure of *justice*'. [90]

Combe's application of phrenology was not restricted to political issues alone. Like many of his contemporaries, he was concerned with the conditions of the workers in the industrial towns, and the rise of pauperism and crime. These were the urgent issues which spurred the Scottish evangelical leader, Thomas Chalmers, on to the ideal of a 'Godly Commonwealth', or another Scotsman, Robert Owen, to experiment with Socialism in New Lanark. The same concerns had found voices in their English counterparts amongst Christians like F. D. Maurice and Charles Kingsley in their Christian Socialism. Combe was fully aware of the success of the industrial system which had brought unprecedented wealth to Britain. In giving his lectures of *Moral Philosophy* in 1832, Combe was able to state that 'no nation in the world possess[ed] so much wealth as Great Britain: none display[ed] such vast

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[89] Combe, *Letter to the Editor of the Scotsman*, dated 10th February 1858.

[90] NLS MS7388, f.810, George Combe to M. B. Sampson, 2 December 1844.

property in the possession of individuals'.[91] However, amongst the dazzling and glittering array of riches in her large towns, Combe also witnessed the rise in pauperism and heathenism. His analysis of the plight of the urban poor was extensive, and the long working hours and the conditions of the charity-workhouses were two of his most recurrent themes. Describing the state of society in which 'the grand object of each' was:

> To gain as much power and distinction to himself as possible. He pursues this object without any direct regard to his neighbour's interest or welfare; ... he dedicates his whole powers and energies to the production of the mere *means of living*, and he forces all his fellows to devote their lives to precisely the same pursuits.[92]

Repeatedly Combe spoke out against the practice of long hours of labour in the industrial system, which benumbed the faculties of the labourers and deprived them of the leisure essential for any moral and intellectual cultivation. In addition to campaigning for shorter working days, Combe proposed that on all private business should be suspended on Sundays, and 'a portion of time should be set apart for teaching in public assemblies, and for discharging our social duties'.[93] The contents of these public instructions should include science and knowledge of the natural laws of the universe, which would facilitate men to live more harmoniously with their physical and moral constitution. His assessment of the charity-workhouses as the breeding ground for the next generation of paupers showed his practical insight. 'In point of fact', declared Combe, 'in feeding pauper children with the most moderate quantity of the coarsest and cheapest food', means were taken to perpetuate the evil of pauperism. He reasoned that bad feeding in childhood weakened the body and the mind, and consequently diminished the power of the individuals to provide for themselves. He considered it imperative that these children should be supplied with nutritious diet, and to be given adequate education to avert this spiral of pauperism.

For Combe, phrenology was not just a science, it was a religion. Phrenology offered Combe a scheme to understand man's moral constitution with reference to his physical constitution. What hitherto seemed to be arbitrary in the make-up of a person's character or abilities became predictable within the parameters of the science. What was hitherto the realm of metaphysics became instead a verifiable

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[91] Combe, *Moral Philosophy*, 114.

[92] Ibid., 113.

[93] Ibid., 131.

science. A God who was just and caring that Combe had failed to find in orthodox Christianity could now be discerned through the natural laws He had instituted in the moral universe. The certitude in a God that Combe had discovered through phrenology far exceeded what he was able to grasp in the Calvinistic tradition in which he was brought up. In Combe, we do not see a compartmentalisation of his science and his religion. On the contrary, he sought to integrate his phrenology into a religion such that the two systems in fact became one, and *The Constitution of Man* was the synthesis of his science and his religion. Phrenology also became an effective religious force that empowered Combe to formulate his opinions on a wide range of political, social and moral issues. In formulating these opinions, Combe also sought to change the world, out of the deep conviction that God had instituted natural laws to allow justice to be exhibited in the moral universe as we inhabit now, not in the future world after death.

V

By his own admission, Combe professed himself to be a Christian to the end of his life. In what sense was he a Christian? It was fairly clear that Combe was *not* a Christian in the orthodox sense. By the time he penned *The Constitution of Man*, Combe no longer owed any allegiance to the established Church of Scotland, or any other established churches for that matter. Nor would he honestly subscribe to the Westminster Confession, or any articles of faith associated with an established church. Combe publicly admitted that he was rejecting 'doctrinal Christianity', and by that he meant the belief system based on certain doctrines like the Fall, the Atonement, Predestination. In reality, he was probably rejecting the whole establishment that maintained 'doctrinal Christianity' as orthodoxy. In practice, however, Combe did not openly break with the establishment, for the sake of social respectability rather than out of any conviction of their rightfulness. The discrepancy between what Combe really believed in, and what he seemed to keep up for appearances was sharply pointed out by his brother, Andrew Combe.

This discrepancy was highlighted during the chair contest of 1836, which occasioned some pertinent and penetrating remarks from Andrew. The testimonies that Combe amassed in support of his candidacy suggested an element of duplicity in

some cases, and Andrew was concerned by this duplicity as compromising Combe's character. From the silence of Andrew Thomson and Thomas Chalmers, Andrew rebuked George for forcing 'a testimony from their silence at variance with their real opinion'. In a similar vein, Andrew continued, 'The same with your sitting 'for years' in his church – when in reality you only had a seat for a year or two and did not sit'.[94] Andrew was pointing out that Combe had a seat in a church but did not actually attend church. In another letter to George occasioned by the chair contest, Andrew referred to the discrepancy between the public and private positions in Combe's attitude towards Scripture:

> In truth, I have frequently before warned you that you go much too far in alluding to Scripture. You often declare and still more frequently imply a perfect belief in revelation. If you think you don't, you give little credit to the logical perception of the public. ...You gain a few present disciples by mystifying, but it is by placing yourself in a position immeasurably below where you ought to ...The Author of the Constitution and the expounder of God's moral law ought himself to be their bodily representative.[95]

Andrew was pointing out the fact that Combe no longer believed in Scripture as revelation, but was prepared to pretend otherwise in public. Combe's view of the Bible would suggest the influence of the German higher critics of Scripture. Evidence in this direction came from the extant correspondence between Combe and Marian Evans (George Eliot), who publicly endorsed the rationale in the approach of German biblical criticism. In one of her letters to Combe, Miss Evans stated that she was 'never fond of the plan of availing oneself of the elasticity of the biblical text to make the scriptural writer teach philosophy and to force truth on the believer in inspiration'.[96] It was a stance that Combe adopted, but was not prepared to be as open about it as George Eliot was. But as Andrew was not slow to point out to Combe, he had gone 'much too far in alluding to Scripture', and he gave 'little credit to the logical perception of the public'. This logical perception of the public was articulated by Albert Collins in a letter to Combe in 1836:

> It appears to me extraordinary that you should endeavour to show that your system of the constitution of man is compatible with revealed religion. I believe that to all the great truths of that religion, your system is diametrically opposite. If those passages in revelation which relate to the fate of man, the depravity of the human race, and

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[94] NLS MS7238, f.14, Andrew Combe to George Combe, 12 August 1836.

[95] NLS MS 7238, f.10, Andrew Combe to George Combe, 7 July 1836.

[96] NLS MS 7333, f.93, Marian Evans to George Combe, 22 January 1853.

> the necessity of regeneration, be forgeries – let them be expunged; but so long as those passages remain – and it would destroy one half of the book to take them away – it appears to me useless to say, that a work which contradicts those doctrines, is in perfect accordance with the Book that declares them true.[97]

Albert Collins was correct in his assessment that Combe's 'system of the constitution of man' was incompatible with revealed religion. In this regard Andrew reminded Combe after the chair contest that those who had been entrusted to elect the future professor 'would be neglecting their duty to look on and allow an unchristian professor to teach their students'.[98] Combe was 'unchristian' in that he believed neither in the established faith nor in Scripture as revelation. There was no doubt that Combe was not a Christian in the orthodox sense. This would appear to be the interpretation of Combe's religious position by most of his contemporaries, since Combe was widely speculated to be the anonymous author of *Vestiges of the Natural History of Creation* (1844), a book adjudged to be irreligious and had caused a great sensation to Combe's contemporaries.[99]

However, Andrew's comments also reinforced the assessment of Combe as a believer of some kind. In writing *The Constitution of Man*, Combe saw himself acting 'as the expounder of God's moral law'. In professing himself to be a Christian in *An Inquiry of Natural Religion*, there was probably no element of duplicity as there was in some instances in 1836. *An Inquiry* was written when Combe was sixty-five; it was more a confessional statement at the close of his life than a text with a political agenda like his testimonials in 1836. In Combe's own words, *An Inquiry* was 'intended for posthumous publication, if ever published at all'.[100] In stating that he was a Christian, Combe probably did believe himself to be a Christian. He understood that he was not a Christian in the orthodox sense, but in the

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[97] NLS MS7238, f.1, Albert Collins to George Combe, 12 August 1836.

[98] NLS MS7238, f.10, Andrew Combe to George Combe, 7 July 1836.

[99] See James Secord, *Victorian Sensation – The Extraordinary Publication, Reception, and Secret Authorshi of Vestiges of the Natural History of Creation* (Chicago, 2000), 378: 'Most strikingly, in print Combe never denied rumours that he had written *Vestiges* himself, although in conversation and correspondence he was more open.' Combe's own suspicions that Chambers (with whom he was personally acquainted) was the author of *Vestiges* were confirmed 'after criticisms he made verbally to Chambers appeared in a new edition'. An example of such correspondence -- NLS MS 7390, f.66, George Combe to the Author of 'Vestiges of the Natural History of Creation', 1st March 1845, sent via the publisher, which was the Chambers Brother in this case. The letter reads, 'Sir, I beg leave to return my best thanks to you for the honour done me in sending me the third edition of your work. Congratulate him on the success. The work has been assigned to various authors, (including my Brother Dr. A . Combe and myself) but so far as I can learn , no one has yet conjectured who you are.'

[100] Combe, *An Inquiry into Natural Religion*, vii.

sense that his God came from the Christian tradition, even though he had discarded all the doctrines associated with this Christian God. More specifically, Combe's God was in his essence God the creator, who revealed himself through his creation, in the order of the physical and moral universe. In this respect, Combe's God was the God of design, of governance, of wisdom and providence that was established within the tradition of natural theology. What the natural theologians had established before Combe was God the creator in the *physical* universe; what Combe set out to do through the science of phrenology was to establish the same God of design and governance in the *moral* universe. In doing so, Combe considered himself as laying down a new foundation of morality based on natural laws. In moving the basis of morality away from doctrinal Christianity, Combe considered himself offering a more secure basis of morality. It would be fair to say that Combe considered Christian doctrines as the arbitrary outcomes of the interpretations of the Bible by various human efforts. Ordinances revealed in the natural order were more 'secure' because they were not arbitrary – they were inflexible and inevitable. In professing himself a Christian, Combe was largely holding on to the conception of God the creator within the tradition of natural theology.

In denouncing doctrinal Christianity and promoting a natural religion, Combe had also undermined the authority of the established faith. 'Have not your delights in the *Constitution* been doubled by thinking that it will in time undermine a system based upon error and superstition?'[101] The rhetorical question Andrew put to Combe would suggest that the undermining was not unwittingly done. Though Combe admitted a God in his version of natural religion, he was providing the artifices for a system of beliefs that could move easily into the godless 'religion' of the French materialists, who promoted a mechanistic view of the universe where certain causes would lead to certain effects. The laws of nature were hailed as governing both the courses of the physical universe and the actions of the living creatures. Vegetation followed the pattern of seasons in bringing forth their fruit and shedding their leaves; animal actions were dictates of their instincts and senses, there was no volition involved; human beings were on a par with the other living creatures, actions and judgments followed the course of the given circumstances and the dictates of instincts; to improve behaviour, one had to improve the circumstances which drove people to act in a certain way. The political stance of the followers of the French

[101] NLS MS 7238, f.10, Andrew Combe to George Combe, 7 July 1836.

materialists tended to be revolutionary, for they believed that human improvement was not a matter of converting the souls to virtues, but to improve the circumstances of life with the end of promoting greater happiness for more people. Their religious position tended to be atheistic, for in a mechanistic universe, the laws of nature governed everything. There was no need for a Creator-God to sustain the physical universe or to uphold the moral fabrics of society. Man was only matter, there was no soul and no future life after death, no post-mortem retribution; this life and this world were all that we had. Salvation meant the improvement of this world and this life. In abandoning the Christian God, the French materialists, chief of whom d'Holbach, turned Nature into the new deity. In denouncing revealed religion and instituting a code of morality based on natural laws, Combe was paving the way for many who had the Bible and *The Constitution of Man* on their shelves, to substitute the former with the latter; and eventually, substituting God with Nature.

Frankenstein's Hideous Progeny

> Frightful must it be; for supremely frightful would be the effect of any human endeavour to mock the stupendous mechanism of the Creator of the world.
>
> Mary Shelley, 1831[1]

I

In her preface to the 1831 edition of *Frankenstein*, which is a short account relating the origin of the novel, Mary Shelley referred to *Frankenstein* somewhat affectionately, as 'my hideous progeny', which she bid to 'go forth and prosper'.[2] First issued on 1 January 1818, *Frankenstein* has indeed prospered, to the extent that the name 'Frankenstein' has outstripped its author's in fame. The progeny of a ghost-story writing contest, *Frankenstein* had its inception in June 1816, in the same year that the Lawrence-Abernethy debate flared up. The ungenial summer brought incessant rain and days of confinement to Percy and Mary Shelley, who were on a continental tour, to seek the company of their neighbour, Lord Byron in his villa Diodati, by the Lake of Geneva.[3] For amusement, they read ghost stories translated from German into French, and Bryon proposed that they each wrote a ghost story. Mary Shelley's story grew out of a half-waking reverie in which she 'saw the hideous phantasm of a man stretched out, and then, on the working of some powerful engine, show signs of life, and stir with an uneasy, half-vital motion'.[4]

Present at Diodati was also Byron's physician *cum* travelling companion, John William Polidori, who was, by one assessment, 'a first-rate physician fresh out

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[1] Mary Shelly, *Frankenstein, the 1818 Text*, ed. Marilyn Butler with 'Introduction', (Oxford, 1994), 'Author's 1831 Preface' as Appendix A, 196. Preface to 1818 edition was by Percy Shelley.

[2] Ibid.,197.

[3] *Frankenstein* was set in Geneva and its immediate environs. The breath-taking scenery of the region described in *Frankenstein*, like *le Mer de Glace* and Chamounix, featured in Mary's *Journal.* See Frederick Jones (ed.), *Mary Shelley's Journal*, (Oklahoma, 1944), 50-61.

[4] *Frankenstein*, 196.

of Edinburgh'.[5] Polidori (1795-1821) had obtained his doctoral degree in medicine from Edinburgh at the unusual age of nineteen, and was recommended by Sir Henry Halford to Byron on the strength of his extraordinary talent. Indeed the precocious Polidori would be compared with Frankenstein. Although Polidori was not specifically mentioned in Mary Shelley's 1831 account as directly contributing to the genesis of *Frankenstein*, his presence most probably directed the interest of the party at Diodati towards the latest scientific issues in medicine, and anatomy and physiology.

The night before the proposed contest, Polidori's diary entry for 15 June 1816 recorded his conversation with Shelley 'about principles – whether man was to be thought merely an instrument'.[6] In her preface to the 1831 edition of *Frankenstein*, Mary Shelley referred to another conversation, between Shelley and Bryon, revolving around 'the nature of the principle of life', and to which she was 'a devout but nearly silent listener'. Discussion on the probability of discovering and communicating the principle of life gave rise to three speculations: first, of spontaneous generation of life as demonstrated by Erasmus Darwin's experiment with vermicelli preserved in a glass case; secondly, of reanimating a corpse by galvanism; and finally, of reconstructing a creature from component parts and then contriving for it to be 'endued with vital warmth'.[7] This conversation, taking place some days after the proposed contest and immediately before her nightmarish reverie, was attributed by Mary to be the source for her 'acute mental vision' from which *Frankenstein* was born. Frankenstein's Monster was reconstructed from component parts gathered from the charnel house, dissecting room, and slaughter pen, and the creature was then 'infused with a spark of being' with 'the instruments of life'.[8] In this respect, the Monster was a hybrid of those speculations between Bryon and Shelley concerning the principle of life. It was not the product of spontaneous life generation, or a reanimated corpse, but a reconstructed humanoid,

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[5] Polidori's sister was the mother of William (editor of Polidoir's works) and Christina Rossetti. James Rieger, 'Dr.Polidori and the Genesis of *Frankenstein*', *Studies in English Literature* 3:4 (1963),468.

[6] William Rosetti (ed.), *Diary of J.W. Polidori, 1816* (1911), quoted Butler, 'Introduction', *op. cit.*, xxi-ii. Butler addresses the issue of seeming discrepancies between Mary's and Polidori's accounts of the conversation(s), and concludes that more than one conversation in this general area might have taken place.

[7] *Frankenstein*, 195.

[8] Ibid., 38.

with components gathered from dead bodies, and animated with instruments suggestive of galvanism.[9]

Shelley's budding interest in science dated back to his Eton years, when two of his teachers, Adam Walker (1731-1821) and Dr James Lind (1736-1812), directed the precocious and inquisitive mind of Shelley towards scientific interests. From Walker, Shelley developed a keen interest in astronomy, electricity, and magnetism; from Lind, an unorthodox doctor trained in Edinburgh, Shelley learned about chemistry and medicine. Shelley's scientific interest took a more practical turn when he began his training, in some earnest, as a professional surgeon after being expelled from Oxford for his share in publishing *The Necessity of Atheism.* It was Shelley's surgical training that brought the Lawrence-Abernethy debate to bear upon the conception of *Frankenstein.*

During the five months from April to August 1811, Shelley attended Abernethy's anatomical lectures and walked the wards of St Bartholomew's Hospital under Abernethy's tutelage.[10] Through his training, Shelley certainly became acquainted with William Lawrence, who was working as Abernethy's demonstrator at the time. In the winter of 1814 to the summer 1815, Shelley's health significantly deteriorated, and Lawrence became Shelley's physician, and treated him on what was widely speculated to be syphilis.[11] From 1814 through to 1817, some form of friendship probably developed between Lawrence and his patient. Shelley's letter recorded attending on 21 September 1817 the wedding of a 'Mr William Lawrence and Miss Jane Clarke, notable because the couple objected to the legal necessity of a religious ceremony, and refused to kneel during it'.[12] Given that Shelley was invited to what was apparently a fairly private ceremony, Shelley and Lawrence were on fairly familiar terms. In September 1817, it was noted that Shelley brought along the manuscript of *Loan and Cythna* on his trip to London (from Marlow,

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[9] *Edinburgh Review*, 3 (1803): 194-98 on John Aldani's *An Account of the late Improvements in Galvanism* (London, 1803).

[10] Nora Crook and Derek Guiton, *Shelley's Venomed Melody* (Cambridge, 1986), 1-26; Butler, 'Introduction', xv. Shelley and Lawrence might have been met before 1811 through their mutual membership of the Godwin circle.

[11] Crook and Guiton's study represents the most comprehensive investigation on Shelley's 'incurable disease', the term used by Mary in her *Journal.*

[12] Hugh Luke, 'Sir William Lawrence, Physician to Shelley and Mary', *Papers on English Language and Literature*, 1 (1965), 141-52; quoted in Bynum, *op. cit.*, 134.

Buckinghamshire) to consult Lawrence on his health,[13] While Shelley might have discussed his poems with Lawrence, Lawrence's scientific expertise was probably instrumental in guiding Shelley's reading in 1814-17.[14] On Lawrence's advice following this consultation in September 1817, Shelley resolved to seek the warmer clime of Italy to improve his health. In March 1818, Shelley sailed for Italy and was never to see England again. He was drowned in Leghorn in July 1822. Lawrence's intellectual influence on Shelley during this period is a focus of Marilyn Butler's *Introduction* to *Frankenstein*, in which she draws specific attention to 'a significant, previously unnoted part' played by Lawrence in the gestation of the *Frankenstein*.[15]

For the purpose of this thesis, the Lawrence-Shelley connection placed *Frankenstein* firmly within the discourse in contemporary science concerning life and mind. The Lawrence-Abernethy debate on the principle of life probably had informed some of Shelley's opinions on the subject which he expressed at Villa Diodati. In March 1816, when Lawrence delivered his two *Introductory Lectures*, which were effectively a retort of Abernethy's 1814 lecture on the Hunterian principle of life, the Shelleys were living in Bishopsgate, Windsor. They left for Switzerland in May 1816, and the crucial conversation on the principle of life between Shelley and Bryon might have been influenced by Lawrence's very recent lectures. In June 1816, Mary began writing *Frankenstein*; the couple returned to England in the autumn of 1816 and settled from January 1817 in Marlow. *Frankenstein* was finished in June 1817,[16] during which year Abernethy delivered his lectures that publicly addressed the humiliating blows dealt out by Lawrence in 1816. Butler rightly points out that the conceiving and writing of the novel were almost contemporaneous with the Lawrence-Abernethy debate, and that Lawrence was physician to Percy Shelley in this period.

Regarding the nature of the mind, Butler points out that the consultations with Lawrence would have focused on 'Shelley's nervous condition, his suggestibility and his dreams,' and when Lawrence and Shelley discussed the nature of the mind, 'different traditions of thinking about mind plainly converged'.[17] These discussions,

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[13] Roger Ingpen (ed.), Shelley's letter to Lord Bryon of 24 September 1817, *The Complete Works of Shelley and Letters*, 10 vols., (London, 1914), IX, footnote, 245.

[14] Butler, *op. cit.*, xvi.

[15] Ibid., xii.

[16] Mary Shelley's Journal entry on 18 June 1817: 'Frankenstein' was sent back [by publisher John Murray], Jones, *op. cit.*, 81.

[17] Butler, 'Introduction to *Frankenstein*', xvii-viii.

Butler suggests, were most likely the background to Shelley's fragments written in 1815 on 'Metaphysics' and 'Morals', which she considers to have featured in the conception of *Frankenstein*. In short, Butler's study highlights the prominence of the Lawrence-Abernethy debate as the backdrop of *Frankenstein*; the scientific issues concerning the origin of life and the nature of the mind were central, rather than incidental to the conception of the novel. In this respect, *Frankenstein* can justifiably be read as an alternative critique of the contemporary science that Rennell was taking issue with.

Rennell's assessment of scientific ideas was inextricably bound up with their religious and social implications. In flavour and in tone, *Frankenstein* was very different from Renell's *Remarks*. But as a critique, *Frankenstein* embodies the moral sense which warns of the danger of pursuing scientific knowledge for its own sake. The social and moral consequences unleashed by Frankenstein's scientific experiments strongly imply that scientific endeavours have wider implications that could not be devolved from the science itself. In this respect, *Frankenstein* as a response to contemporary science was closer to Rennell's *Remarks* than it first appeared. This chapter is an attempt to read *Frankenstein* as an alternative critique of Lawrence on the theories of life and mind *on a par* with Rennell's *Remarks*. Under three broad headings, this essay explores what *Frankenstein* said about contemporary *science*, *religion* and *society*. The 1831 edition of *Frankenstein,* which included Mary Shelley's preface, also contained numerous substantive amendments to the original 1818 text. While the 1831 Author's *Introduction* is illuminating for the current discussion, the 1818 text of *Frankenstein* is used for the following discussion for being most immediately contemporary with Rennell's *Remarks* of 1819. Another layer of textual variances exists between Mary's Manuscript and the 1818 text incorporating Percy Shelley's changes.[18] Some consider Percy's alterations as more than stylistic; one commentator adjudges that the alterations have the overall effect of undermining Mary's assumption of 'the existence of a sacred animating principle, call it Nature or Life or God', by adding 'his atheistic concept of a universe mechanistically determined by necessity or

[18] Charles E. Robinson, (ed.) *The Frankenstein Notebooks, a facsimile edition of Mary Shelley's Manuscript Novel, 1816-17, (with Alterations in the Hand of Percy Bysshe Shelley) as it survives in Draft and Fair Copy Deposited by Lord Abinger in the Bodleian Library, Oxford*, 2 vols. (London, 1996).

power'.[19] A study of textual variances between the Manuscript and the 1818 text might highlight further nuances. However, Percy's alterations, substantive or stylistic, had been incorporated with authorial consent. For the purpose of the current discussion therefore, it was the *published* 1818 text, rather than the Manuscript, that ranked as a contemporary critique similar to Rennell's *Remarks*.

II

In genre, *Frankenstein* was conceived to be a 'ghost-story' – 'one to make the reader dread to look round, to curdle the blood, and quicken the beatings of the heart'.[20] But *Frankenstein* is more than just 'a wildest story imagined', 'it has an air of reality attached to it, by being connected with the favourite projects and passions of the times'. Such were the remarks of the *Scots Magazine*, [21] which quite correctly identified the perennial appeal of *Frankenstein* beyond that of a mere ghost story in its possession of an air of reality based on contemporary science. The reviewer also aptly named 'the projects and passions of the times' that became encapsulated in *Frankenstein* as nothing less than 'the discovery of the means to communicating life to an organized form', in terms which resonated with the Lawrence-Abernethy debate on life.[22]

Frankenstein's 'project and passion' which led to the creation of his Monster were eloquently and succinctly related in less than ten pages of text.[23] The project contained two distinct stages: the *discovery* of the cause of life, and the *experiment* in using the knowledge of animation. By Frankenstein's account, the discovery originated in his peculiar interest in 'the structure of the human frame, and, indeed, any animal endued with life', which caused him to become acquainted with the science of anatomy. But Frankenstein's ultimate interest was not in the structure of animal frames *per se*, but in the mystery that lay behind animated forms. 'Whence

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[19] Anne Mellor, 'Choosing a Text of *Frankenstein* to Teach', in ed. J. Paul Hunter, *Frankenstein,* A Norton Critical Edition (London, 1996), 162-170.

[20] Mary Shelley, *Frankenstein*, 'Author's 1831 Preface', 195.

[21] *The Scots Magazine & Edinburgh Literary Miscellany*, 81 (1818): 249-253, 249.

[22] Ibid., 250.

[23] *Frankenstein*, 32-40.

did the principle of life proceed?' was the bold question that preoccupied Frankenstein. From anatomy, Frankenstein turned to physiology to uncover the mystery of life, which gave him the insight that 'to examine the causes of life, we must first have recourse to death'. To understand death, Frankenstein was 'forced to spend days and nights in vaults and charnel houses' in order to 'observe the natural decay and corruption of the human body'.

From the account of Frankenstein's scientific progression, it was clear that the study of animal frames shed light on the human body, and that anatomy was the basis for physiology. Mary Shelley might not have read Lawrence's 1816 *Introductory Lectures*, but the rendering of the crucial relationship between anatomy and physiology echoed Lawrence's exposition of their underlying relationship:

> The anatomy of animals have been investigated at first, in order to throw light on the organization and functions of the human body, ... comparative anatomy... means the anatomy of all living things, compared to each other. It thus furnishes the data, which constitute the basis of general *physiology*, of which the object is to determine the laws that regulate the phenomena exhibited by organized beings.[24]

In asserting that the causes of life were to be sought by recourse to death, Frankenstein was acting out the conviction in the latest notion in contemporary physiology of defining life as a state capable of opposing the onset of the decaying process exerted by environmental influences. According to Abernethy, the English physiologist John Hunter considered Life as 'a great chemist', which 'even in a seemingly quiescent state, had the power of resisting the operation of external agency, and therefore preventing the decomposition of those bodies in which it resided'.[25] Lawrence, as a follower of the French physiologist Xavier Bichat, defined Life as 'the assemblage of those functions which resist "death"'.[26] As founder of the science of histology, Bichat also identified 'tissue' rather than organ, as the more basic organizational unit. Whether it was the English 'vitalist' school which conceived Life as externally imposed by an agency beyond organization, or the French school which considered Life as an emergent property of organization, they shared in common the view that whatever life was, it was the ability to resist

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[24] Lawrence, *Introductory Lectures* (London, 1816), 8.

[25] Abernethy, *Physiological Lectures* (1817), 27.

[26] Bichat: 'la vie est l'ensemble des functions qui résistent à la mort', quoted in Rennell's *Remarks*, 60, from Bichat's *Recherches physiologiques sur la vie et la mort* (Paris, 1800), full reference of the publication from Hall, *op. cit.*, 122.

death. Frankenstein's discovery of the causes of life was unambiguously portrayed as made by studying death. It was by 'examining and analysing all the minutiae of causation, as exemplified in the change from life to death, and death to life' that the secret of life was yielded up to him.

The discovery of 'the cause of generation of life' meant that Frankenstein now possessed the power of bestowing animation. Such tantalizing capacity led him on to the stage of *experiment*. Nights and days he toiled to construct a human frame as the receptacle of his animating power. 'I had worked hard for nearly two years, for the sole purpose of infusing life into an inanimate body', recalled Frankenstein. The ultimate moment of infusion was, by contrast, brief and anticlimactic for Frankenstein:

> With an anxiety almost amounted to agony, I collected the instruments of life around me, that I might infuse a spark of being into the lifeless thing that lay at my feet. ... I saw the dull eye of the creature open; it breathed hard, and a convulsive motion agitated its limbs.

The culmination of the experiment was the point where Mary Shelley began her original tale.[27] It was the hub from which the rest of *Frankenstein* developed. The few sentences that related the process of animation, though brief, touched upon a multitude of contemporary scientific speculations concerning the causes of life.

Firstly, 'the instruments of life' had reference to galvanism which Mary explicitly alluded to in her 1831 preface. In 1791, the Bolognese physiologist Luigi Galvani published *De Viribus Electricitatis in Motui Musculari Commentaris*, reporting the contractions observed on the limbs of frogs, deprived of life, when they were in contact with an arc of metal wire connected to a pile of copper and zinc plates. Galvani concluded that electricity was causing the contractions; he observed that this form of electricity was different from the natural form as from lightning, or static electricity generated by friction. He postulated (incorrectly) that this new form of electricity was innate to animals, and called it 'animal electricity', generated mostly by the brain, and as a fluid capable of 'flowing' through the nerves to the muscles, thereby producing the stimulus necessary for muscular motions. Galvani was correct in detecting electricity, correct even in detecting that it 'flowed' like a fluid, but he was incorrect in ascribing the electricity as unique to animals. The ultimate scientific import of Galvani's 'animal electricity' was in discovering what

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[27] Mary Shelley, 1831 Preface, 197.

was in fact current electricity (also known as galvanic electricity), which led on to the construction of batteries by Volta for its generation.[28] However, the postulation of the existence of 'animal electricity' as a cause of life appeared to gain a wider and sensational propagation by Galvani's nephew, Giovanni Aldani.

In December 1802, to a London audience including the Prince of Wales, the Dukes of York, Clarence and Cumberland, Aldani performed an experiment using a Voltaic pile connected by metallic wires to a recently killed ox-head. It was observed that 'the eyes were seen to open, the ears to shake, the tongue to be agitated, and the nostrils to swell,' as if the animal were to go into combat. In January 1803, a similar experiment was conducted by Aldani on the corpse of Thomas Forster, an hour after the murderer was hanged at Newgate. The Voltaic pile this time, consisting of 120 plates of zinc and copper each, was attached to wires which were then connected to the ear and mouth of Forster, 'the jaw began to quiver, the adjoining muscles were horribly contorted, and the left eye actually opened'. By smearing volatile alkali on the points of stimulus, the convulsions were so much increased as to 'give an appearance of re-animation'.[29] The spectres continued into 1804, when Aldani conducted further experiments, in which 'the bodies of human corpses became violently agitated and one even raised itself as if about to walk'. A 'lighted candle placed before the mouth was several times extinguished' when respiration was artificially re-established by exerting pressure against the ribs.[30]

'Perhaps a corpse would be reanimated; galvanism had given token of such things,' recalled Mary Shelley in her preface. Aldani's series of experiments between 1802 and 1804 might have been behind Mary Shelley's reference to galvanism and its part in the genesis of *Frankenstein*. Galvanism certainly excited contemporary interest and made headlines; many of Aldani's experiments were conducted in public, as before the Commissioners of the French National Institute, or

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[28] What Galvani had discovered was current electricity, which he (incorrectly) postulated as innate in animals. Alessandro Volta built on the experiments, and by 1800, had constructed electrical batteries consisting of electrodes of dissimilar metals in a salty electrolyte. In Galvani's experiments, electric current was generated with the two different metal piles acting like electrodes, and the animal's body fluid, the electrolyte.

[29] John Aldani, *An Account of the Late Improvements in Galvanism, with a series of Curious and Interesting Experiments performed before the Commissioners of the French Institute and repeated lately in the Anatomical Theatres of London; to which is added, An Appendix, containing the author's Experiments on the Body of a Malefactor executed at Newgate* (London, 1803), 54. Quoted in Anne Mellor, *Mary Shelley, Her Life, Her Fiction, Her Monster*, (Routledge, 1988), 105-6.

[30] Ibid.,106, summarising Paul Fleury Mottelay, *Bibliographical History of Electricity and Magnetism* (London, 1922), which contains complete set of references to Aldani's experiments, 305-7.

to noble celebrities in the Anatomical Theatres in London. Aldani's *Late Improvements in Galvanism* (1803) was reviewed by reputable journals such as the *Edinburgh Review*, which cautioned against Aldani's claims by concluding:

> While we admit that the production of muscular contraction, by the combination of animal organs, to all appearance dead, is a very curious circumstance, we cannot allow that it affords any proof of the presence of a *peculiar* electricity in living bodies, or that it tends, in the slightest degree, 'to explain the sensations and contractions in the animal machine.[31]

Aldani was, however, so perfectly convinced of the existence of 'the ethereal animal fluid', that he entertained great hopes that 'Galvanism may be usefully applied in cases of apparent death from suffocation'. In fact, the ultimate aim of Aldani's research was nothing less than the command of the vital powers:

> To conduct an energetic fluid to the general seat of all impressions; to distribute its influence to the different parts of the nervous and muscular systems; to continue, revive, and, *if I may be allowed the expression, to command the vital powers*; such are the objects of my researches, and such are the advantages which I propose to derive from the action of Galvanism.[32]

The preamble, 'if I may be allowed the expression,' suggested that Aldani was aware of the 'monstrosity' of his ambitions. In words that resonated with Aldani's ambitions, Victor recounted the thoughts that supported his spirits through the unremitting toil:

> ... if I could bestow ambition upon lifeless matter, I might in process of time ... renew life where death had apparently devoted the body to corruption.[33]

Frankenstein's experiments read almost like a replica of Aldani's in some respects. Victor recorded that he had 'tortured the living animal to animate the lifeless clay;' which suggested possibly that 'the spark of life must be transferred from a living animal to a dead one'.[34] In terms reminiscent of the descriptions from Aldani's experiments, the animation of the Monster was rendered as: 'the dull yellow eye of the creature open; it breathed hard, and a convulsive motion agitated its limbs'. The Voltaic metal piles suspended in saline solution for the generation of galvanic

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[31] Review of John Aldini's *An account of the Late Improvements in Galvanism etc* (London, 1803), *Edinburgh Review*, 3 (1803), 194-98, 195.

[32] Aldani, *Galvanism*, 153. Italics mine.

[33] *Frankenstein*, 36.

[34] Suggestion made by Samuel Holmes Vasbinder, *Scientific Attitudes in Mary Shelley's Frankenstein* (Michigan, 1984), 39.

electricity would loosely comply with the descriptions as 'the instruments of life' in animating the Monster or the 'chemical apparatus' used in creating his mate. Quite appropriately, Mary Shelley was scant in details of either the instruments or the process of animation. It was more than plausible, however, that Aldani's experiments had not only caught the imagination of the contemporary public, but also indirectly fired the imagination of Mary Shelley in the genesis of *Frankenstein*.

The second scientific speculation that was touched upon in *Frankenstein* concerned the *theory* of electricity as a cause of life. If Aldani was the experimentalist of 'animal electricity', Abernethy was one of the 'theorists' trying to interpret the data. Abernethy's 1814 lectures, which Lawrence derided in his 1816 lectures, contain an explication of electricity as a possible cause of 'irritability'. In physiology, 'irritability' referred to the range of voluntary and involuntary responses in organized structures upon stimulation, while 'sensibility' designated the range of conscious and unconscious feelings. To trace the cause of irritability was, in eighteenth-century physiology, to pinpoint the cause of 'life-as-action'.[35] Was 'life-in-action' emergent as an activity of matter in a particular configuration, or did it require an added principle? This was the eighteenth-century physiological question that Hunter theorised on, and Abernethy tried to expostulate, based on his interpretation of Hunter's opinions and the latest developments in galvanic electricity. Abernethy dismissed the proposition that irritability was 'the effect of chemical change' on the premise that reiterated contractions were produced by Voltaic electricity during twenty-four hours on limbs of animals severed from the body. He argued that since supply of materials for any chemical change to the limbs was also severed, the experiment invalidated the claim that 'irritability' was the result of chemical change. Hunter's opinions, as advocated by Abernethy, was that 'irritability is the effect of some subtile, mobile, invisible substance, superadded to the evident structure of muscle, or other forms of vegetable and animal matter, as magnetism is to iron, and as electricity is to various substances with which it is connected'. Invoking the authority of Newton, Abernethy asserted that all matter was governed by the property of *vis inertiae*, thereby necessitating 'the superaddition

[35] For example, La Mettrie identified the self-moving power of organism with the concrete phenomenon of muscular irritability in his *l'Homme Machine* (1747).

of some subtile and mobile substance'.[36] He postulated that 'a subtile invisible substance', powerfully mobile, was responsible for muscular motions in a like manner as the subtile substance causing magnetic and electric motions. In fact, Abernethy came close to identifying electricity as the cause of irritability by asserting that:

> To be as convinced as I am of the probability of Mr Hunter's Theory as a cause of irritability, it is ... necessary to be as convinced as I am that electricity is what I have now supposed it to be, and that it pervades all nature.[37]

The phenomena of electricity and irritability, in Abernethy's opinion, corresponded:

> The motions of electricity are characterized by their celerity and force; so are the motions of irritability. The motions of electricity are vibrating; so likewise are those of irritability.[38]

While drawing analogies between electricity and the subtile substance that caused irritability, Abernethy was emphatic that it was not 'meant to be affirmed that electricity [was] life':

> I only mean to prove that Mr. Hunter's theory is verifiable, by shewing that a subtile substance of a quickly and powerfully mobile nature seems to pervade everything, and appears to be the life of the world; and therefore it is probably that a similar substance pervades organized bodies, and produces similar effect in them.[39]

Lawrence was scathing about Abernethy's postulation that the cause of life was analogous with electricity. 'The truth is, there is no resemblance, no analogy between electricity and life: the two orders of phenomena are completely distinct; they are incommensurable,' asserted Lawrence.[40] Abernethy's speculation was a true reflection, however, of the intense contemporary interest in the power and nature of electricity. As regards its nature, electricity was 'visible' through its power, but 'invisible' in its existence; mobile like fluid and subtile like ether. Albani's 'animal electricity' was referred to variously by him as the 'energetic fluid', 'elastic fluid, or 'ethereal animal fluid'. The fluidic form ascribed to electricity was probably closely connected with the belief that it was a force that could permeate all matter. The

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[36] Abernethy, *Introductory Lectures* (London, 1815), 41; a classic example reflecting the absence of a distinct category for considering the behaviour of life-matter, and how life-matter was made to fit the mould conceptualised for physical matter.

[37] Ibid.,36-9.

[38] Ibid., 42.

[39] Ibid., 51.

[40] Lawrence, *Introductory Lectures* (1816), 170.

belief of its all-pervading nature in turn led to the speculation that electricity could be like gravity, a unifying force behind all matter, even living matter. In *Frankenstein,* it was Benjamin Franklin's discovery of 'the perfect similarity between electricity and lightning' that was dramatised. Named as Franklin's greatest discovery and 'of the greatest practical use to mankind' by Priestley, [41] the wonder of this powerful perfect similarity was a focal point in Victor's scientific awakening. Witnessing the strike of lightning on an old oak, young Victor was utterly amazed by the dazzling power, which blasted the oak to its stump and reduced it to 'thin ribbands of wood'. He eagerly inquired of his father:

> the nature and origin of thunder and lightning. He replied, 'Electricity'; describing at the same time the various effects of that power. He constructed a small electrical machine, and exhibited a few experiments; he made also a kite, with a wire and string, which drew down that fluid from the clouds.

It was not only the stupendous power of electricity that was captured in this passage, but the 'fluidic' form in which it was conceived to exist. The 'fluid' that tore across the sky could likewise be captured in the small electrical machine, probably a Leyden jar, for storing static (atmospheric) electricity. First invented in 1745, the Leyden jar was very much in vogue both in laboratories and in private studies by the late eighteenth century. Galvani used the static electricity stored in a Leyden phail to experiment with stimulation of muscular contractions in living and dead animals in the 1770s, and soon pioneered electricity as a healing agent for certain diseases. John Wesley's *Desideratum, or electricity made plain and useful* (1760) dwelt extensively on the healing power of electricity and inferred that the nature of electricity was little short of a 'miracle' and must be of divine origin. For example, he referred to the experiment where electrified water could set off spark and even cause combustibles to catch fire over water as the work of God.[42] The improvements in patients after electrical therapy was believed to be the result of loss of internal electricity being replenished; and the widespread acceptance of the healing property of electricity further reinforced the speculation that electricity was the vital force.

Against the background fascination of electricity as the possible vital force, Mary Shelley was probably directly instructed by Humphry Davy and Percy Shelley

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[41] Joseph Priestley, *The History of the Present State of Electricity,* introd. Robert Schofield, 3rd ed., The Sources of Science, No. 18 (New York, 1966), 2, 204.

[42] Simon Schaffer, 'Natural Philosophy and Public Spectacle in the Eighteenth Century', *History of Science*, 21(1983), 1-43, 5-6.

on this matter. Mary was only nineteen when she wrote *Frankenstein.* Though precocious, extremely well-read, and introduced to some of the most fascinating scientific ideas through members of the Godwin circle, Mary was not as steeped in science as Percy was. In 1816, Mary read Davy's *Discourse, Introductory to a Course of Lectures on Chemistry* (1802), the only ostensibly scientific text read during the genesis of *Frankenstein.* Professor Waldman, who tutored Frankenstein at university, embodied the most positive (though not unreservedly) image of science in the story and has been inferred as modelled after Davy.[43] The invention of the voltaic cell in 1800 allowed Davy to embark on researches in electro-chemistry, another reflection of the contemporary interest in the applications of electricity. His experiments on electrolysis of aqueous solutions culminated in 1807 when he successfully isolated sodium and potassium metal by the electrolysis of their fused salts. Davy's analysis of salts into metal lent further credence to the belief of the all-permeating power of electricity, including the chemical nature of matter. Going hand in hand with the all-permeating nature of electricity was the belief that electricity as a force was part of the harmonious whole governing the cosmos. It was no coincidence that Michael Faraday, Davy's scientific apprentice at the Royal Institution from 1813, should be researching on the 'interconvertibility' of the powers of nature – electricity, magnetism, gravity and heat during this period. Historically, Ritterbush explains such extravagant belief of electricity in the early nineteenth century as due to the fact that:

> The inheritance of a harmonious system of forces was made to order for electrical speculation. The relationship between the speculative framework and the newly discovered cosmic force accounts for the extravagance of belief.[44]

This extravagant belief was personified by Percy Shelley. As a student at Oxford, Shelley owned electrical apparatus consisting of several Leyden jars. His intimate Oxford friend Thomas Jefferson Hogg related how Shelley begged him to work 'the machine' until:

> he was filled with the fluid, so that his long, wild locks bristled and stood on end. Afterwards he charged a powerful battery of several large jars; labouring with vast energy and discoursing with increasing vehemence of the marvellous powers of electricity, of thunder and lightning; describing an electrical kite that he had made at home, and

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[43] For example, Butler, Vasbinder and Mellor all make the same references in their respective studies.

[44] Philip C Ritterbush, *Overtures to Biology: The Speculations of Eighteenth-Century Naturalists,* (New Haven, 1964), 25.

> projecting another ... enormous one, or ... a combination of kites, that would draw down from the sky ... the whole ammunition of a mighty thunderstorm; and this being directed to some point would then produce the most stupendous results.[45]

Before Oxford, Percy was tutored in the sciences at Eton by Adam Walker, whose *System of Familiar Philosophy* (1799) made the connection between electricity and life, as illustrated by Galvani. Despite Percy's contact with Lawrence between 1814-17, it was not clear that Percy was 'weaned' off the teaching of Walker and his speculation of vital power of electricity by Lawrence's theory of life as emergent from organization. In fact, the strong evidence proffered by Percy Shelley's *Prometheus Unbound* (1819),[46] published in the year after *Frankenstein*, in which the force of life was repeatedly portrayed as 'electrical', suggested that galvanism and electricity continued to capture Shelley's imagination. On more than one score, Frankenstein was modelled after Percy Shelley, and in the details of his scientific interests, Frankenstein almost exactly replicated Percy.[47] For instance, Percy's youthful obsession with the medieval Albertus Magnus and Paracelsus was faithfully reincarnated in Frankenstein, and with it Mary Shelley introduced the tension that prevailed through the narrative between the sway of the ancient alchemists on Frankenstein and his embrace of the new sciences which he imbibed at University of the Ingolstadt.[48] To annex the mighty power from the sky towards the most stupendous results – in this, Shelley's youthful ambition was translated into *Frankenstein, the Modern Prometheus.* The text hinted at the central role of 'electricity' in animating the Monster: 'a spark of being' was infused presumably by

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[45] Thomas Jefferson Hogg, *The Life of Shelley* (London, 1858), I: 33.

[46] In 1819, Percy Shelley also wrote the poem 'England in 1819' in the aftermath of the 'Peterloo' massacre; the poem was a parody of the state of government in England in 1819. In politics, Shelley was a disciple of Godwin's. However, by this stage, Mary Shelley was already disowning the radical politics she was brought up through the subversive use of the image of 'Monster', which Edmund Burke had used in his *Reflections on the Revolution in France* (1790) to characterise the masses in a revolution. See Anne Mellor's discussion in the chapter on 'Promethean Politics', *op. cit.*, 70-88; and Lee Sterrenburg, 'Mary Shelley's Monster: Politics and Psyche in *Frankenstein*', in G. Levine and .U.C. Knoepflmacher (eds.), *op. cit.,* 143-171.

[47] Victor was Percy's pseudonym for publishing his childhood poem in 1810. Parallels between Frankenstein and Percy Shelley: (1) Family -- father married a wife young enough to be his daughter; the oldest son had a favourite sister/cousin named Elizabeth. (2) Education – both were fascinated with science, especially chemistry and were gifted linguists. See Mellor, *op. cit.,* 72-23; and Peter Dale Scott, 'Vital Artifice: Mary, Percy and the Psychopolitical Integrity of *Frankenstein*', in G. Levine and .U.C. Knoepflmacher (eds.), *The Endurance of Frankenstein* (Berkeley, 1974), 172-202.

[48] Ingolstadt was the home of the *Iluminati*, a secret revolutionary society founded in 1776 by its Professor of Law, Adam Weishaupt, whose goal -- to free all men from the slavery imposed by 'society, governments, the sciences, and false religion'-- Percy Shelley eagerly endorsed. Mellor, *op. cit.,* 73.

'the instruments of life,' and involved the transfer of the spark of being from a living animal to a dead one as earlier suggested. In place of fire, the 'modern' Prometheus stole electricity from 'heaven', metaphorically speaking – with the most stupendous results.

For the debate on the origin of life as *imparted* by a principle or *emergent* from organization, Frankenstein's experiment was a firm model of life as imparted. Butler's interpretation is that Frankenstein's blundering experiment was one 'working with superseded notions'; it shadows the intellectual position of Abernethy; and Mary Shelley's 'serio-comic representation' echoed Lawrence's sceptical commentary on Abernethy's position.[49] This interpretation is more one attempted in hindsight than one that fairly reflected the position of Mary Shelley during the genesis of *Frankenstein.* Given that Percy Shelley seemed to hold a comparable view that the vital force was electrical, and assessing the evidence from the journals, letters and reading lists of the couple, it was unlikely that Mary Shelley was consciously offering a critique on the scientific merits of what in hindsight proved to be 'superseded notions'.[50] *Frankenstein* was first and foremost a reflection of the sensational contemporary interest in galvanism and its related fascination with electricity as possibly 'the principle of life'. Abernethy's theory of life was, incidentally, an attempt to harmonise the intense contemporary (not yet superseded) speculation involving electricity as the vital principle with the school of *vitalism.* The vitalist position was that life could not have resulted from matter, and that life must be an external principle imparted to matter. Far from being 'superseded', Abernethy's theory, tangential as it appeared to posterity, resonated within the popular core of scientific speculation, which continued well into the 1830s. A prominent example was Andrew Crosse's 'extraordinary experiment', in which the spontaneous generation of life was linked to electricity was reported by a local newspaper on the last day of 1836. A sensational debate on the origin of life and electricity ensued; Crosse was accused of being a Frankenstein, a 'disturber of the peace of families', and 'a reviler of our holy religion'.[51]

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[49] Butler, op. cit., xxi.

[50] There was no evidence of either Lawrence's or Abernethy's Lectures having been read by the Shelleys.

[51] James Secord, 'Extraordinary Experiment: Electricity and the Creation of Life in Victorian England', in David Gooding, Trevor Pinch, Simon Schaffer (eds)., *The Uses of Experiment* (Cambridge, 1989), 337-383, 338.

It would appear that Abernethy's theory and Mary Shelley's inspiration were both responses to the contemporary speculation on galvanism and electricity as the possible animating force. But then, with an interesting twist, and probably unwittingly, Mary Shelley highlighted the illogicality of the vitalist position such as espoused by Abernethy. The vitalist position originated from the intuitive grasp that living matter was distinct from non-living. Matter could not animate matter; the force of animation must therefore be externally imparted to matter to make it alive; this force of animation must therefore be 'immaterial'; and for the Christian tradition, this immaterial force had been designated as 'the soul'. In naming the animating force an 'invisible', 'subtile' fluid, Abernethy was tenuously clutching onto the immateriality of the vital principle. In portraying Frankenstein as being able to harness and manipulate this animating force, in the same manner as one could manipulate matter, Mary Shelley drove home the inconsistency of the vitalist position – life was externally imparted -- but by a material force. The invisible, subtile fluid was still matter after all.

The third scientific speculation in *Frankenstein* of direct relevance to this thesis pertains to the creation of the artificial man, whose origin could be traced to Descartes' beast-machine. Descartes first hypothesised the beast-machine in *Treatise of Man* around 1632,[52] in which animal life was explained in terms of mechanical operations. The life exhibited in animals was due to a corporeal force which Descartes called *vim vegetandi et sentiendi.* This vegetative and sensitive force existed in man as well, and was the force that vitalized matter. Corporeal and mechanical in nature, this vital force was for Descartes, not the soul. In conceiving the beast-machine, Descartes sought to re-define 'soul' sharply by distinguishing the soul from the vitalizing principle, which man had in common with brutes. Descartes designated the 'soul' to mean the incorporeal mind that man alone possessed. For Descartes, the soul was synonymous with reason. The soul remained incorporeal for Descartes, and by re-defining the 'soul' to be the mind and not the animating principle, immateriality applied only to the mind alone.

The concept of the beast-machine was taken to its logical conclusion by Julien de la Mettrie in *L'Homme Machine* (1747). In devising the man-machine, La

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[52] Descartes withheld his *Treatise* from publication when he heard about Galileo's condemnation by the Church. Parts of the *Treatise* were published anonymously in 1637 in Section V of his *Discourse on Method.* Descartes died in 1650, and the complete *Treatise* was published by his executor in 1664.

Mettrie proceeded to remove the Cartesian soul by maintaining that the full range of mental phenomena could be accounted for by cerebral irritability. Like his eighteenth-century contemporaries, La Mettrie considered the phenomena of irritability as the key to the mystery of life itself, but what he proposed in *L'Homme Machine* was to 'erect the mechanistic theory of mind on this firm biological foundation'. All mental activities, including reason, could be explained mechanically. The rational mind, the *de facto* Cartesian soul, was viewed in refraction by La Mettrie 'through the primary level of the instincts', 'ce merveilleux Instinct, dont l'Education fait de l'Esprit'.[53] In La Mettrie's conception, man was a machine like the beast-machine, and there was no place for the soul:

> The term 'soul' ... which an enlightened man should employ solely to refer to those parts of our bodies which do the thinking. Given only a source of motion, animated bodies will possess all they require in order to move, feel, think, repent – in brief, in order to *behave*, alike in the physical realm and in the moral realm which depends on it ... Let us then conclude boldly that man is a machine, and that the whole universe consists only of a single substance [Matter] subjected to different modifications.[54]

To La Mettrie, thought was 'so little incompatible with organized matter, that it [seemed] to be one of its properties on *a par* with electricity, the faculty of motion, impenetrability, extension, etc'.[55] In the final analysis, the man-machine became absorbed into the mechanist school as symbolic of the belief that the manifestations of instinct, sensibility, and even intelligence – typifying human behaviour – could be explained in terms of organic mechanism.

In *Frankenstein*, the creation of an artificial man from dead material pushed the formulation of the man-machine to its extremes, creating the most powerful symbol of materialism in fictional narrative. In his essay *On Life*, Percy Shelley remarks that if we 'reflect upon the manner in which thoughts develop themselves in [our] minds,' it is 'infinitely improbable that the cause of mind, that is, of existence, is similar to mind'.[56] Shelley probably meant that the cause of mind was life, and the cause of life was different from the nature of mind. The Monster was not only animated, and was in full possession of a mind. Read as a contemporary response to

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[53] La Mettrie, *L'Homme Machine*, introd. Aram Vartanian (Princeton, 1960), 22.

[54] Toulmin and Goodfield, *op. cit.*, 166, quoting La Marriet.

[55] La Mettrie, *L'Homme Machine* ; quoted in Vasbinder, *op. cit.*, note 24 to chapter 4, 90.

[56] Percy Shelley, 'On Life,' in Carlos Baker (ed.) *Selected Poetry and Prose of Percy Bysshe Shelley*, (New York, 1951), 460.

the science of the mind, *Frankenstein* cast into sharper relief the two questions concerning the nature of the mind, namely: Is medullary matter capable of sensation and thought? Does the Monster have a soul, in the sense of an immaterial mind? The first question concerns the nature of the agent of knowledge – is it the immaterial mind or the material brain that perceives and thinks? The second question asks whether the creature, irreducibly material in its genesis, possessed any element of 'immateriality', of 'spirituality', that transcended the man-machine?

Mary Shelley did not specifically refer to the creation of the Monster's brain, nor explicitly linked the emergence of consciousness with the presence of a brain. But assuming that the Monster was a full artificial replica of man and was given a brain, Frankenstein presumably would have gathered material from the dissecting room or the slaughter house. Given the gigantic size of the Monster, and if the brain, like his limbs, was 'in proportion', then it was probably a composite of medullary matter that constituted his brain, for an average brain would be insufficient to fill the cranium. It was clear that the Monster did not inherit a personality or any memories though the composite material forming his brain would have belonged to others. Furthermore, the story maintained that the brain material thus sourced was sufficient for a separate consciousness to evolve over time. The process of knowing about the external world developed in tandem with the Monster's attainment of self-knowledge, and the self-narrative of the Monster of his growth was itself a powerful device to re-enact such an attainment. 'If it were possible that a person should give a faithful history of his being, from the earliest epochs of his recollection, a picture would be presented such as the world has never contemplated before,' wrote Percy Shelley in 1815.[57] The Monster's self-account of first sense experience reads just like such an attempt:

> A strange multiplicity of sensations seized me, and I saw, felt, heard, and smelt, ... and it was ... a long time before I learned to distinguish between the operations of my various senses. By degrees, ... a stronger light pressed upon my nerves, ... I was obliged to shut my eyes. Darkness then came over me, and trouble me; but ... by opening my eyes, ... the light poured in upon me again. ... I felt cold also, and half-frightened as it were instinctively, ... I knew, and could distinguish, nothing; but, feeling pain invade me on all sides, I sat down and wept.[58]

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[57] Percy Shelley, 'Speculations on Metaphysics' (written 1815, published 1840), in Carlos Baker (ed.), *Selected Poetry and Prose of Percy Bysshe Shelley* (New York, 1951), 473.

[58] *Frankenstein*, 80.

That the creature's sense experiences were the foundation for the emergence of consciousness was unambiguous. In this respect, Mary might have been influenced by Locke's *Essay Concerning Human Understanding* (1690), which Mary read in 1816. Lockean epistemology asserted that all our ideas were derived from experience of the external world through the senses and reflection. In other words, ideas were not innate. Locke also postulated that if God so wished, he could endow certain systems of created senseless matter with thought, reason and volition, as well as sense and spontaneous motion. Locke's famous postulation of the 'thinking matter' was 'realised' by Frankenstein's experiment; and in making the composite matter of the Monster's brain capable of sensation and thought, Frankenstein was no less than 'playing' God.

In another respect, Mary's conception of the Monster's 'mind' could be a reflection of the contemporary interest in the nature of the mind. Perhaps partly influenced by the consultations with Lawrence and the notion that 'medullary matter is capable of sensation and thought,' Percy Shelley wrote *Speculations on Metaphysics* in 1815.[59] 'We can think of nothing which we have not perceived'.[60] In his tract *The Necessity of Atheism* (1811), Percy Shelley asserted that 'the senses are the sources of all knowledge to the mind'. This was one of the premises upon which Percy Shelley concluded that 'every reflecting mind must allow that there is no proof of the existence of a Deity'. Since an immaterial Deity could not be known by the senses, there could be no basis for a belief in God: 'the mind *cannot* believe the existence of a God'.[61] In Shelley, his epistemology and his atheism were conjoined. Inferring from his epistemology, the mind came into existence by virtue of knowing about the material world. Along with La Mettrie, Shelley would probably maintain that there was no place for the immaterial soul.

The process of the Monster's acquisition of knowledge seemed to conform to Shelley's epistemology, and the account of the Monster's sense of evolving identity

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[59] Vasbinder notes the influence on the genesis of *Frankenstein* by David Hartley's *Observations on Man, His Frame, His Duty, and His Expectations,* which Percy Shelley bought in 1812. Hartley was an empirical materialist who considered that ideas were the result of sensations alone. Vasbinder, *op. cit.,* 39-42.

[60] Shelley, *Metaphysics*, 470. Shelley also observes that there was no essential distinction between thoughts 'called *real* or *external* objects' and 'hallucinations, dreams, and ideas of madness', (to which he was susceptible).

[61] Roger Ingpen & Walter Peck (ed.), *The Complete Works of Percy Bysshe Shelley,* 10 vols. (London, 1965), V:207-210.

rendered in fictional narrative what Percy wrote in philosophical speculation: 'We are,' asserted Shelley, 'intuitively conscious of our own existence, and of that connexion in the train of our successive ideas, which we term our identity'.[62] The process of knowing and of forming the mind in the Monster's case would suggest that some of Percy's views were absorbed in the genesis of *Frankenstein*. In creating a man-machine, Mary Shelley has woven a story in which medullary matter was made capable of sensation and thought. However, in the last analysis, Mary subverted the utter materialism of the man-machine conception by allowing Frankenstein's hideous progeny a 'soul'-- a spiritual aspect of the creature's personhood that utterly refuted mechanical explanations. Despite all his fiendish acts, the Monster had first sought 'the love of virtue, the feelings of happiness and affection', he was 'nourished with high thoughts of honour and devotion;' and his 'thoughts were once filled with sublime and transcendent visions of the beauty and the majesty of goodness'.[63] Had the Monster been a mere man-machine, he might have been more 'controllable'. But Mary intended the Monster to have reason, emotions and volition which interplayed to guide his action. Pleading with Frankenstein to make him a companion, the Monster asserted: 'I was benevolent; my soul glowed with love and humanity;' that his vices were 'the children of a forced solitude'.[64] The creature that was given a being by scientific materialism had needs and yearning that could not be satisfied materially.

But perhaps, the most subversive ploy against scientific materialism in *Frankenstein* was the subtle shift in Victor's attitude towards the dead. In pursuing his project to create a Monster, Victor remarked that 'the churchyard was to [him] merely the receptacle of bodies deprived of life, which from being the seat of beauty and strength, had become food for the worm'. This attitude, as befitting a scientist in Victor's estimation, was the result of his education, in which he proudly proclaimed that his 'father had taken the greatest precautions that [his] mind should be impressed with no supernatural horrors'.[65] It was a stark contrast when Victor entered the cemetery to mourn the dead of his family, he observed that 'the spirits of the departed seemed to flit around, and to cast a shadow, which was felt but seen not,

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[62] Ibid., 472.

[63] *Frankenstein*, 189.

[64] Ibid., 78, 121.

[65] Ibid., 33-4.

around the head of the mourner'.[66] Not only did he feel the presence of the spirits in the graveyard, but that he actually knelt and invoked them to aid him in his pursuit of vengeance:

> I call on you, spirits of the dead; and on you, wandering ministers of vengeance, to aid and conduct me in my work.[67]

The cemetery scene marked a turning point in the story, in which Frankenstein, hitherto the 'passive' victim being stalked by the Monster, reversed the roles and became the pursuer. During his pursuit, Frankenstein attributed provisions laid down for him on the way, probably by the Monster he was chasing, as 'set there by the spirits that I had invoked to aid me'. When 'parched by thirst', Frankenstein accounted for the rain drops from a slight cloud in an otherwise clear sky that so often revived him as the aid of the spirits. Was Mary hinting that the die-hard materialist scientist had made a sea change in his attitude towards the spiritual? One can argue that such change in perception was not a self-conscious intellectual shift in Victor, but more the result of the vivid imagination of a desperate and bereft being on the verge of a breakdown. If Mary questioned the total negation of the 'soul' and the spiritual aspect of life, she questioned it not by eloquent postulations, but by subversion. By turning Victor's scientific materialism on its head, Mary Shelley cast doubt on the scientific materialism that Victor embraced, and on the notion that man was ultimately a mere machine. In the final analysis, *Frankenstein* defied the utter materialism which the creation of the artificial man symbolised, and the Monster's farewell epitomised such defiance:

> But soon ... I shall die, ... I shall ascend my funeral pile triumphantly, ... My spirit will sleep in peace; or if it thinks, it will not surely think thus. Farewell.[68]

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[66] Ibid., 171. When his bride was murdered and his father died of grief, Victor acted as if all his loved ones were dead. The fate of Ernest, the elder of the two of Victor's younger brothers, is unaccounted for, and is a loose end in the story.

[67] Ibid., 172.

[68] Ibid., 191. See also Martin Willis, 'Frankenstein and the Soul', *Essays in Criticism*, 45 (1995): 24-35, which concludes that Mary Shelley 'provides a microcosm of the dispute between scientific materialism and romanticism'.

III

The *Scots Magazine* warned its readers of *Frankenstein* that 'some of our highest and most reverential feelings receive a shock from the conception on which it turns'.[69] The *Quarterly Review* observed: 'It inculcates no lesson of conduct, manners, or morality; ...it fatigues the feelings without interesting the understanding'. Amidst its mauling criticism the *Quarterly* reviewer added equivocally, that 'in language highly terrific,' there was 'something tremendous in the unmeaning hollowness of its sound, and the vague obscurity of its images'.[70] Both contemporary reviews seemed to make reference to the moral vision of *Frankenstein.* While they could not specify what parts of our highest feelings, or what 'this something tremendous' was, they foreshadowed the mythical stature that *Frankenstein* would attain. The nameless Monster created by Victor Frankenstein has in time, quite appropriately, usurped the name of its creator in folk memory. This duality between the Monster and its creator, central to the story, also immeasurably heightens the mythical stature of Frankenstein. This mythical quality, in turn, was inextricably linked with the moral vision embodied in the sub-title – *The Modern Prometheus.* Clearly intended as an epithet, the sub-title holds the key to the most important quality of Frankenstein. In what sense was Frankenstein a 'Prometheus', and in what sense was he 'modern'? And what was the moral vision being conveyed by 'the vague obscurity of its images' in the *Modern Prometheus*?

The myth of Prometheus had two ancient strands. The Greek Prometheus *pyrphoros* defied Zeus by stealing fire from the sun to succour mankind, and was chained to the Caucasus with vultures feeding on his vitals as punishment. In the Roman version, Prometheus was the *plasticator*, who recreated mankind to animate a figure of clay. Around the third century A.D., the two versions became fused to create the Prometheus who stole the fire of life to animate his man of clay. As M. K. Joseph points out, this fused version 'gave a radically new significance to the myth, which lent itself easily to Neoplatonic interpretation with Prometheus as the demiurge or deputy creator, but which could also be easily allegorized by Christians ... as a representation of the creative power of God.[71] This fused version was

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[69] *The Scots Magazine & Edinburgh Literary Miscellany*, 81(1818):249-253, 253.

[70] *Quarterly Review*, 18 (1818):379-385, 385.

[71] M.K. Joseph, *Introduction to the 1831 Frankenstein* (Oxford, 1969), viii.

portrayed in Ovid's *Metamorphoses*, which Mary Shelley read in 1815:[72]

> Whether with particles of Heav'nly fire
> The God of Nature did his Soul inspire,
> Or Earth, but new divided from the Skie,
> And, pliant, still, retain'd the Aethereal Energy;
> Which Wise Prometheus temper'd into paste,
> And mix't with living Streams, the Godlike Image caste ...
> From such rude Principles our Form began;
> And Earth was Metamophos'd into Man. (I:101-6, 111-12)[73]

Coincidentally, while Mary Shelley was engaged in writing *Frankenstein*, another literary 'contest' involving the deployment of the Prometheus myth seemed to be running in parallel for the Diadoti party. Bryon's 'Prometheus', which Mary Shelley copied out and carried to Byron's publisher on her return to England in August 1816, was a poem celebrating 'the unyielding will, noble suffering and concern for mankind' of Prometheus in his act of defiance.[74] Byron's 'Prometheus' developed into an epic poem *Manfred*, which Mary read soon after its publication in June 1817. In *Manfred*, Byron focussed on the Faustian thirst for knowledge which led Manfred to steal the secrets of nature. In 1816, after re-reading Aeshcylus' play *Prometheus Bound*, Percy Shelley decided to compose a rebuttal, and began *Prometheus Unbound* in September 1818. In his preface, Percy explained that Aeshcylus 'supposed the reconciliation of Jupiter with [Prometheus] as the price of the disclosure of the danger threatened to his empire by the consummation of his marriage with Thetis', the daughter of Jupiter. Percy was 'averse from a catastrophe so feeble as that of reconciling the Champion with the Oppressor of mankind'. In *Prometheus Unbound*, Percy sought to personify Prometheus as 'the type of the highest perfection of moral and intellectual nature, impelled by the purest and truest motives to the best and noblest ends'.[75] These Promethean qualities were indeed what Shelley and Byron thought they possessed as poets. Other Romantic poets like William Blake, in *Visions of the Daughters of Albion*, Coleridge in *Ancient Mariner*, and Goethe in his verse drama *Prometheus*, had all deployed the Prometheus myth to

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[72] Frederick Jones (ed.), *Mary Shelley's Journal*, (Norman, 1944), entries for April 8 to May 11 of 1815, 43-6.

[73] Ovid, *Metamorphoses*, tr. John Dryden, *The Works of John Dryden*, ed. A. B. Chambers and W. Frost (Berkeley, 1974), IV: 378-9; quoted in Anne Mellor, *Mary Shelley, Her Life, Her Fiction, Her Monster* (Routledge, 1988), 71.

[74] Mellor, *op. cit.*, 71.

[75] Carlos Baker (ed.), *op. cit.*, 442-446, 443.

their own ends. In common to the first generation of the Romantic poets was this Promethean desire to transcend human boundaries, 'to elevate human beings into living gods'. The poetic imagination was their means of such elevation. Percy Shelley asserted that 'a poet participates in the eternal, the infinite, and the one'.[76] In similar terms, Coleridge designated the primary imagination 'an echo of the Infinite I am;' and Wordsworth argued that 'the higher minds' of the poets were 'truly from the Deity'.[77] To the Romantic poets, the Promethean qualities of 'the highest perfection of moral and intellectual nature' were embodied in their poetic imagination. Furthermore, they focussed on the defiance of Prometheus as impelled by the 'purest and truest motives to the best and noblest ends'. For instance, Goethe's *Prometheus* was a 'self-portrait of the artist', who 'liberated himself from serving dull, idle gods,' and rejoiced instead in his own creative powers.[78]

Mary Shelley combined the Promethean theme and the ghost story into *Frankenstein*. Though the publication of *Frankenstein* predated the composition of *Prometheus Unbound*, the melodrama of *Frankenstein* was a parody of the Promethean qualities that Percy Shelley, along with other Romantic poets, extolled. Mimicking the acts of Prometheus, Frankenstein 'tortured the living animal to animate the lifeless clay'; and with 'the instruments of life', Frankenstein infused 'a spark of being into the lifeless thing'. In prosaic terms, Frankenstein was 'modern' because in place of fire, he stole the divine spark of life, suggested to be electrical in nature. In two significant respects, Mary Shelley departed from her contemporaries in her deployment of the Prometheus myth. First, she cast Frankenstein as the 'scientist' who animated lifeless clay, not the 'artistic poet' who fashioned the world with his imagination. Secondly, she portrayed Frankenstein as 'usurper', not the defiant hero who suffered for mankind.

In one sense, the Romantic poet deified his imagination by deifying Nature. This desire to transcend the normal bounds of human endeavours was a quality that Mary Shelley highlighted. In the words of Waldman, Victor's professor, the prowess of the modern masters of the science was described as:

> They penetrate into the recesses of nature, and shew how she works in her hiding places. They ascend into heavens; they have discovered how the blood circulates, and the nature of the air we breathe. The

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[76] Percy Shelley, 'A Defence of Poetry', in Carlos Baker (ed.), *op. cit.*, 497.

[77] Mellor, *op. cit.*, 70.

[78] Ibid., 70.

> have acquired new and almost unlimited powers; they can command the thunders of heaven, mimic the earthquake [gunpowder], and even mock the invisible world with its own shadows [magic lantern].[79]

In his pursuit, the scientist transcended himself, and became elevated to a kind of living god: he ascended into the heavens, acquired new and almost unlimited powers. While the poet fashioned Nature with his imagination, the scientist 'penetrate[d] into the recesses of nature'. Lawrence had made similar pronouncements, in respect of life and matter: 'to observe living bodies in the moment of their formation ... when matter may be supposed to receive the stamp of life ... Hitherto, however, we have not been able to catch nature in the fact'.[80] In pursuing Nature to her hiding places, the scientist was heeding the calling from Francis Bacon, who announced, 'I am come in very truth leading to you Nature with all her children to bind her to your service and make her your slave'.[81] Frankenstein's experiment in which creation of a human was made to supplant procreation was symbolic of the very ultimate subjugation of a female Nature 'by an aggressive, virile male scientist'.[82] Nature, far from being deified, was hounded down like a prey by Frankenstein:

> One secret which I alone possessed was the hope to which I had dedicated myself; ... with unrelaxed and breathless eagerness, I pursued nature to her hiding places.

This subjugation, to Mary Shelley, came with its sting. Adroitly, she wove into the narrative that in the process of enslaving nature, Frankenstein became enslaved; in possessing the power of animation, Frankenstein became a 'possessed' being.

Once the secret of animation was possessed, Frankenstein could have stopped; there need not be an experiment to animate a human frame. Indeed he 'hesitated a long time concerning the manner in which [he] should employ' the astonishing power of bestowing animation he possessed. However, as he confessed, 'a resistless, and almost frantic impulse, urged me forward; I seemed to have lost all soul or sensation, but for this one pursuit'. As his labours progressed, showing 'how well he had succeeded', Frankenstein bemoaned that he 'appeared rather like one doomed by slavery to toil in the mines, or any other unwholesome trade, than an artist occupied by his favourite employment'. The tension within Frankenstein was

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[79] *Frankenstein*, 31. See Vasbinder, *op. cit.*, 67-73 for a fuller exposition of the scientific discoveries alluded to.

[80] Lawrence, *Introductory Lectures* (London, 1816), 140-2.

[81] Quoted in Mellor, *op. cit.*, 89.

[82] See Mellor, 'A Feminist Critique of Science', *op. cit.*, 89-114.

palpably heightened in a self-narrative where the normative 'I' predominated with in a self-account,[83] and yet at the same time, this 'I' could not have been more driven. The scientist who appeared to be 'in control' had actually lost control to an impulse:

> ... I could not tear my thoughts from my employment, loathsome in itself, but which had taken an irresistible hold of my imagination. I wished, as it were, to procrastinate [all that related to] my feelings of affection until the great object, [which swallowed up every habit of my nature], should be completed.[84]

Before the changes indicated by the brackets in the above quotation were introduced by Percy Shelley, Mary's manuscript had read: 'to procrastinate my feelings of affection, until the great object of my affections were completed'.[85] The irony would have been intensified without Percy's changes, for within the same breath, Victor described his employment as 'loathsome', and referred to the humanoid as 'the great object of my affections'. Instead of directing his feelings of affection towards real people, Victor was channelling all his 'affections' to an object, which he then utterly rejected at the very moment of its coming to life. Obsessed with the experiment of animation, Frankenstein abandoned human society; oppressed by the consequences of his successful experiment, Frankenstein continued to shirk human interaction. Mary Shelley clearly felt strongly that affections acted as a bulwark against excesses, and interjected at possibly the only point in the narrative where the authorial voice was explicit:

> If the study to which you apply yourself has a tendency to weaken your affection, and to destroy your taste for those simple pleasures in which no alloy can possibly mix, then the study is certainly unlawful, ... not befitting the human mind.[86]

While the Monster would have sacrificed everything to be accepted by society, he was ostracised. In contrast, the success of his experiment had brought on dire consequences that caused Victor to shirk society at every possible juncture. Frankenstein's compulsion for solitude mirrored and mocked at the same time, the 'Spirit of Solitude', in Percy's poem *Alastor*, composed in 1815. In the preface, Percy alluded to 'the Poet's self-centred seclusion was avenged by the furies of an irresistible passion pursuing him to speedy ruin'.[87] The 'self-centred seclusion' was,

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[83] *Frankenstein*, 36-38.

[84] Ibid, 37.

[85] Quoted in Mellor, *op. cit.*, 63.

[86] *Frankenstein*, 37.

[87] Shelley, 'Preface to *Alastor*', in Carlos Baker (ed.), *op. cit.*, 18 -37.

nonetheless, portrayed as the result of the failings in the sympathy of other human beings, denoted by Percy as 'selfish, blind, and torpid, ... those unforeseeing multitudes'. Mary described *Alastor* as 'the outpouring of [Shelley's] own emotion',[88] and Alastor, a youth 'of uncorrupted feelings and adventurous genius,' who drank 'deep of the fountains of knowledge, and [was] still insatiate'[89] was a self-portrait of Shelley and an apt description for young Frankenstein. Alastor's quest led him to haunt the graveyard, a habit Frankenstein shared, where he beseeched the 'Mother of this unfathomable world', to yield up:

> ... thy deep mysteries. I have made my bed
> In charnels and on coffins, where black death
> Keeps record of the trophies won from thee,
> Hoping to still these obstinate questionings
> Of thee and thine, by forcing some lone ghost
> Thy messenger, to render up the tale
> Of what we are. In lone and silent hours.[90]

The solitary quest of Alastor amongst the gravestones for the mysteries of Nature in edifying language found its parody in Frankenstein's equally solitary, but unmistakably profane and sordid, endeavour:

> Who shall conceive the horrors of my secret toil, as I dabbled among the unhallowed damps of the grave, ... I collected bones from charnel houses; and disturbed, with profane fingers, the tremendous secrets of the human frame.[91]

Like Alastor, Frankenstein had pursued 'Mother of this unfathomable world' to yield up her mysteries by haunting the graves. He was 'forced to spend days and nights in vaults and charnel houses;' he 'beheld the corruption of death succeed to the blooming cheek of life'; and 'how the worm inherited the wonders of the eye and brain'.[92] Frankenstein himself admitted that his 'human nature turn[ed] with loathing from [his] occupation'. His project, unhallowed and clandestine, involving stealth and theft, was a direct parody of Alastor's quest; and in that parody, the Promethean myth that the Romantic poets tried to appropriate for elevating man to god, met its immediate antithesis in the Promethean scientist personified by Frankenstein.

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[88] Quoted in Mellor, *op. cit.*, 76.

[89] Percy Shelley, 'Preface to *Alastor*', in Carlos Baker (ed.), *op. cit.*, 18 -37.

[90] *Alastor*, lines 18-29.

[91] *Frankenstein*, 36.

[92] *Frankenstein*, 34.

In deploying the Promethean myth to characterise a scientist, Mary Shelley highlighted the fine line between passion and obsession, and the moral issues raised when the ends became the justification for the means. For instance, while Abernethy was strongly against vivisection,[93] others would have no qualms in using animals to advance physiological research. The fictional Frankenstein, for example, 'tortured the living animal to animate the lifeless clay'. Not only were animal bodies at stake, but the unhallowed occupation of Frankenstein in graveyards and charnel houses reflected the contemporary situation for scientific research into the human body. The underworld of criminal activities involving body snatching, grave robbery, and even murders, were the main source for furnishing the anatomists and physiologists in Britain with cadavers for their research.[94] In Britain, for more than a hundred years until the passing of Anatomy Act in 1832, the procurement of cadavers was a clandestine activity. George Walker's *Vagabond* pictured a young and idealistic Frederick Fenton, the disciple to a radical anatomist, who experimented on the dead to prove the non-existence of the soul. Fenton assisted the anatomist by digging up cadavers, and his ghoulish task paralleled Frankenstein's:

> My practice of plundering the church-yards at the most solemn hours, under danger of detection, and what was words, under the fear of infection from diseases nearly advanced to putrescence before the interment; to break open a coffin, and carry in my arms a naked body, whose scent was sufficient to ferment a plague, was an undertaking that required all the resolution of philosophy, and fitted me for the event of any revolution and combustion of nature.[95]

Walker's description emphasised the will involved in Frankenstein's kind of clandestine activities, and in a footnote, Walker commented on the state of affairs regarding body trafficking:

> It is a known fact, that every part of the human body has a regular price. No person can deny the necessity of dissections, but as at present conducted, they are a disgrace and an outrage on society; -- nor are the jests and levity of some of the young surgeons becoming,

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[93] It would be interesting to explore whether Abernethy's religious sentiments biased him towards a theory of life as imposed, which in turn, predisposed him against vivisection.

[94] See Owen Dudley-Edwards, *Burke and Hare* (Edinburgh, 1993).

[95] George Walker, *Vagabond*, 2 vols. (Lodon, 1798), I: 83; a parody of the philosophy of Godwin, Hume and Rousseau, went into third edition by 1799. A dissenter minister closely acquainted with Priestley, Walker was elected F.R.S. for his mathematical work on conic sections. Walker 'denounced Godwin's theories as a virtual invitation to grave-robbing and trafficking with the dead'. See Lee Sterrenburg, 'Mary Shelley's Monster: Politics and Psyche in *Frankenstein*', in G. Levine and U.C. Knoepflmacher (eds.), *The Endurance of Frankenstein* (Berkeley, 1974), 143-171, 150. Subversively, Mary was disowning the radical politics that her father represented.

over the body of an human being.[96]

In this respect, the 'greatness' of John Hunter, the father of English physiology, was in proportion to his adroit and callous ingenuity in procuring specimens. The *Scots Magazine* remarked on the eight-foot giant Frankenstein pieced together was 'as gainly (sarcastic for ungainly) in appearance at least as O'Brien'.[97] The eight-foot Irish giant Patrick Cotter O'Brien was indeed a prized trophy in Hunter's collections. As O'Brien drank his way to death, Hunter the physician offered no assistance to arrest his demise. Instead, Hunter the scientist employed a body snatcher to stalk O'Brien, and bribed other snatchers with £500, to secure the body against other competitors, probably the largest sum ever paid for a single cadaver. The night-watch eventually secured Hunter's prize, which he escorted to his laboratory. Before morning dawned, Hunter had cut up the giant's body into manageable segments to boil the flesh away. The hasty process turned the bones of the giant brown, but in all other respects, they formed 'a splendid skeleton'.[98] Behind the splendid skeleton was a callous passion that threatened to make the end justify all means. In casting Frankenstein as a modern Prometheus, Mary Shelley was not only offering a critique of the Poet eulogised in *Alastor*, but of the passion that guided (or goaded) scientists like Hunter to pursue their goals.

In casting ancient Prometheus as a modern scientist, Mary Shelley played on the potential of the scientist to be the 'champion of mankind'. In the first instance, Frankenstein's goal appeared to be guided by lofty motives.

> Life and death appeared to me ideal bounds, which I should first break through ... A new species would bless me as its creator and source; many happy and excellent natures would owe their being to me. No father could claim the gratitude of his child so completely as I should deserve theirs. ... I thought, that if I could bestow animation upon lifeless matter, I might in process of time ... renew life where death had apparently devoted the body to corruption.[99]

Instead of philanthropy, it was self-glorification and aggrandisement that motivated Frankenstein. He was gripped by the prospect of being the *first* to break through the bounds of life and death. In other words, the 'ideal bounds' that had bounded all human beings would be unlocked by him. In so doing, Frankenstein metaphorically

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[96] Walker, *op. cit.*, I:82.

[97] *The Scots Magazine*, *op. cit.*, 250.

[98] John Kobler, *The Reluctant Surgeon* (London, 1960), 242-3.

[99] *Frankenstein*, 36

speaking, became more than just man, he became a 'creator', a god. Frankenstein's hideous progeny referred not only to the ghastly appearance of his creation, but the nature of the act of his creation as ungodly. The Monster was left to discover from Frankenstein's laboratory papers, the disgusting circumstances under which he was produced, and 'the minutest description of [the Monster's] odious and loathsome person' was rendered in language which painted Victor's own horrors.[100] Yet inexorably, Frankenstein carried his experiment to its bitter end, and his crime was summed up in the reproach of the Monster: 'How dare you sport thus with life?'[101]

> Why did you form a monster so hideous that even you turned from me in disgust? God in pity made man beautiful and alluring, after his own image; but my form is a filthy type of yours, ... Satan had his companions, ... but I am solitary and detested.[102]

Victor's creation story mirrored, on one level, the biblical creation of man – the parallels between God creating Adam who turned against him and the force of evil unleashed in this act of disobedience. It was not the science that had failed in Victor's case. On the contrary, the experiment was so successful that a 'being' was created dispensing with the initial physical dependence. But in failing to give the Monster a sense of belonging in a web of human relationships, Victor had failed abysmally to take moral responsibility for his creation. On another level, *Frankenstein* explored the theme of 'disobedience' of Adam against his Creator. Adam ate the apple from the tree of knowledge against the injunction of his Father. A similar act of disobedience was re-enacted by the two scientists in the novel: young Victor imbibed the 'science' of the medieval alchemist Agrippa against the warning of his father; and against his father's injunction not to set sail, Walton aspired to be an Arctic explorer.

In Adam's case, his disobedience was also his transgression. Mary Shelley clearly saw that there were likewise certain boundaries that man transgressed at his own perils: 'how dangerous is the acquirement of knowledge ... [for him] who aspires to become greater than his nature will allow'.[103] The fatal flaw in Frankenstein's tragic-heroism lay in this transgression of limits, in his vain hope for self-aggrandisement and glory beyond the legitimate bounds by tempering with life.

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[100] Ibid., 105.
[101] Ibid., 77.
[102] Ibid., 105.
[103] Ibid., 35.

'From my infancy I was imbued with high hopes and a lofty ambition,' confessed the dying Frankenstein to Robert Walton, but 'like the archangel who inspired to omnipotence, I am chained in an eternal hell'.[104] The theme of transgression was so central to *Frankenstein* that Mary reinforced it with Walton's ambition to be the first to reach the Arctic. Like a quasi-Promethean scientist, Walton was motivated by the desire to 'accomplish some great purpose'; he confessed that he 'preferred glory to every enticement that wealth placed'.[105] When immured in ice, the turning-point in Walton's expedition took place when the crew voted to abandon the voyage for home if they ever escaped. The dying Frankenstein who had been rescued by Walton's crew bounding for the North Pole, flared up with all his residual strength and lectured the crew on the meaning of glory:

> Did you not call this a glorious expedition? ... because it was full of dangers and terror; ... because danger and death surrounded, and these dangers you were to brave and overcome. For this was it a glorious, for this was it an honourable undertaking. You were hereafter to be hailed as the benefactors of your species; your name adored, as belonging to brave men who encountered death for honour and the benefit of mankind. ... Do not return to your families with the stigma of disgrace ... Return as heroes who have fought and conquered.[106]

Walton would 'rather die, than return shamefully, -- [his] purpose unfulfilled'. Lacking the tragic-heroic stature of Frankenstein, Walton directed his expedition homewards, with his ambition dashed. Frankenstein's speech, however, suggested that he had not relented from his Promethean ambition as a scientist, even though he was dying from it. In the final analysis, Victor's final words to Walton might serve to be Mary's:

> Farewell, Walton! Seek happiness in tranquillity, and avoid ambition, even if it be only the apparent innocent one of distinguishing yourself in science and discoveries.[107]

The crimes of the Monster were borne out of the misery of being ostracised, of being brought into a world void of the web of human relations vital for his integration into society. Victor's transgression, in contrast, was borne out of self-imposed isolation – intellectual and emotional. Mary Shelley seemed to consider society as a bulwark against such transgression; and in the *Modern Prometheus*, she

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[104] Ibid., 180.

[105] Ibid., 7.

[106] Ibid., 183.

[107] Ibid., 186.

was making a profound assessment of the danger inherent in the wish of the scientific community to be left on its own to carry out its enquiries, unperturbed by public debates. In that respect, 'Frankenstein, the usurper' was a powerful reworking of the Promethean myth for the *necessity* of the kind of public discussions that eventually resulted in the complete withdrawal of Lawrence's published works, even though she might not necessarily endorse the withdrawal itself. Rennell's *Remarks*, 'intrusive' as Richard Carlile or Lawrence might think, had its place in society essentially because we do not live in isolation, the insulation of the scientists' endeavours totally immune from the knowledge and critique of the non-scientific world could be costly in terms of the consequences they wield. The moral message of *Frankenstein* was not along the line of the religious pamphleteers or their leader, Rennell, who concerned themselves that materialism would lead to atheism; but its moral vision embodied elements deeply rooted in biblical parallels, and the tenacity of such moral vision is testified by the iconic significance 'Frankenstein' has attained.[108]

[108] See Jon Turney, *Frankenstein's Footsteps – Science, Genetics and Popular Culture* (New Haven, 1998) for an exposition of the continuing significance of *Frankenstein*.

Conclusion

> What is the cause of life? that is, how was it produced, or what agencies distinct from life have acted or act upon life? All recorded generations of mankind have weariedly busied themselves in inventing answers to this question; and the result has been, -- Religion. Yet, that the basis of all things cannot be, as the popular philosophy alleges, mind [God's mind], is sufficiently evident. Mind, as far as we have any experience of its properties, ... cannot create, it can only perceive.... If any one desires to know how unsatisfactorily the popular philosophy employs itself upon this great question, they need only impartially reflect upon the manner in which thoughts develop themselves in their minds. It is infinitely improbable that the cause of mind, that is, of existence, is similar to mind.
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> Percy Bysshe Shelley, 1815.[1]

I

Reflecting on what he called the cause of life in 1815, Shelley provided us with a good starting point for the conclusion of this thesis. He pointed out that in 'popular philosophy,' God's mind was alleged to be the basis of all things. Here, Shelley's use of the term 'mind' reflected contemporary usage, in that the mind represented the immaterial or spiritual, and God, as the supreme spiritual being was seen as pure mind. By insisting that the mind could not create, but could only perceive what was already external to it, Shelley's intent was to deny God. If God is mind, Shelley argues, He cannot create but only perceive what is already external to Him. When Shelley argues that, 'it is infinitely improbable that the cause of mind, that is, of existence, is similar to mind', he means to say that if God is mind, then God could not be the first cause but must Himself be the result of a cause, and that cause cannot be anything like another mind, but must be a different kind of entity, one which is, unlike minds, capable of acts of creation. Shelley also pointed out that the effort in search of an answer to this question by all recorded generations had all resulted in Religion. By Religion with a capital 'R', Shelley probably meant to imply that religion is merely the man-made result of mankind's muddled thinking (about the nature of minds, immaterial beings, and God). Similarly, this thesis has argued that in the three episodes examined, where the cause of life and the nature of the mind

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[1] Percy Shelley, 'On Life', in Carlos Baker(ed.), *Selected Poetry and Prose of Shelley* (New York, 1951), 457-460, 460.

were debated, it was Religion – as a man-made institution for the support of a civil, and moral, society – which was the ultimate concern, not the nature of God and his Providence.

Writing in 1815, the popular philosophy that Shelley referred to encompassed a belief system wherein the doctrine of an immaterial soul was upheld as the basis for an existence in the future state. All hopes of immortality therefore were anchored on some form of immaterial agency that would survive the physical death of the material body. The importance of the future state for this life lay primarily in supporting a religious basis of morality that prescribed a post-mortem system of reward or retribution. In this popular philosophy, the philosophical concern for an immaterial soul was driven by the concern for immortality, and the concern for immortality was driven by the politico-religious concern for a basis for a morality, seen entirely in terms of social and civic responsibility in order to maintain the *status quo.*

In the Lawrence controversy, the debate between Lawrence and Abernethy appeared to be one on the substance of two opposing theories of life — one material, the other immaterial. The express materialism of Lawrence's theory of life being 'caused' by the material organization of bodily matter seemed to be directly opposed to Abernethy's interpretation of Hunter's theory of life based on a superadded vital principle transcendent to the bodily matter. On closer examination, however, it was found that there was an element of vitalism in Lawrence's materialism, and there was an element of materialism in Abernethy's vitalism. The Lawrence-Abernethy debate transpired to be concerned less with the substance of the two theories of life than on the importance of supporting a theory of life that could be made to serve the traditional alliance between religion and morality. Hunter's theory, by explicitly admitting the need for a superadded principle external to bodily matter, could easily be made to look compatible with orthodox religious teachings. Moreover, by advocating a theory that could be made to reinforce a religious basis of morality, Abernethy directly conferred moral respectability on the whole profession that he represented. It is important to note, also, that Lawrence himself came to recognise the importance of the moral responsibility of the science writer, and genuinely seems to have repented of the unguarded comments in his original lectures.

In examining the religious opposition met by Lawrence in promoting a theory of life based on organization, it appeared in the first instance that in promoting a

materialistic theory of life, Lawrence was undermining the doctrine of an immaterial soul. By undermining the immateriality of the soul, it was feared that the concept of God as a spirit, an immaterial being, would also be undermined. In a nutshell, it was as if Lawrence's scientific materialism was condemned because it was feared that it would promote atheism by disproving the existence of God as a spiritual being. But, given the closeness of the scientific views of Abernethy and Lawrence, it seems clear that the concern towards materialism as an agency for atheism, in its final analysis, was driven by the concern that the religious basis of morality would be eroded. If Scientific materialism called into question the existence of an immaterial soul, and an after-life, then there would be nothing to enforce a code of morality in this life built upon a system of justice in that after life. The poor were exhorted to be content because their virtues would be rewarded in the next life. Post-mortem retribution was used as a deterrent to immorality in this life. The concern that 'Materialism and Atheism go hand in hand' was not so much the concern for the doctrine of the soul *per se,* but a concern for the politico-religious basis of morality that the immaterial soul was supposed to underpin. The major concern, therefore, was not with Lawrence's scientific materialism (not so far removed, after all, from Abernethy's views), but with the public way in which he presented it.

Similarly, in the controversy concerning the nature of the mind surrounding the science of phrenology, it was found that the opposition against phrenology was raised not so much against the scientific materialism in a science that considered the mind as reducible to the brain, but the moral implications of such a reduction. If all mental phenomena were merely the physical expression of a material organ called the brain, then the philosophical foundation for the existence of free will was removed. The chief anti-phrenologist Sir William Hamilton, in his efforts to disprove the claims of phrenology on experimental grounds, was motivated by the concern that the science of phrenology was inimical to the foundation of morality by its implied materialistic determinism. In defending the Scottish common-sense philosophy against phrenology, Hamilton was defending a philosophical system which upheld the conception of a mind undetermined by any absolute necessity of nature. To the common-sense philosophers, the mind had the power over the determination of its own will. For Hamilton, the philosophical foundation of free will was paramount for morality, because the notion of culpability absolutely depended on the possibility of freedom of action. In denouncing phrenology, it was *not* primarily the scientific materialism in the science that was the issue, but what he

saw as the moral implications of such materialism. As a science that promoted the necessity of nature, phrenology was considered antithetical to any arguments for the existence of free will. Without the possibility of free will, there would be no basis for morality, and that was ultimately why Hamilton needed to disprove phrenology.

The force of determination by nature inherent in the science of phrenology that Hamilton so vehemently decried as morally pernicious was turned into a force for morality by George Combe. The *Constitution of Man* was effectively a treatise that instituted a new code of morality based on God-given natural laws which Combe derived from the phrenological doctrines. Causes and effects in human action were portrayed as pre-ordained by God in his governance of the moral universe, in the same manner as the physical laws instituted by Him to govern the physical universe. The law of nature was characterised to be inevitable and inflexible, but in this system of determination by nature, Combe found the certitude for a basis for morality which was, to him, superior to any codes of morality derived by human efforts, which was considered inferior by being arbitrary. In Combe, his science and his religion became one system, in which a more materialistic conception of the mind was employed as the vehicle for a new code of morality. In denouncing doctrinal Christianity, Combe also denounced in full the reliance of the doctrines of the soul and of the future state for the enforcement of morals. In preaching this new code of morality based on the determination by nature, Combe undermined the basis of revealed religion. However, his concern for morality, and his insistence that this was linked to conformity to God's natural laws, shows that he did not intend to undermine the social authority of established religion.

In Mary Shelley's *Frankenstein*, the ambition of a scientist, intent to trespass the boundaries of knowledge, is portrayed as the tragic flaw of the 'hero' in the novel. It points to the morals of the Modern Prometheus as a usurper, and of Mary Shelley's view that there exist boundaries of knowledge that we trespass at our own peril. The Monster was the progeny of the extreme scientific materialism personified by Frankenstein, but the Monster asserted his spirituality as a person against the odds of the circumstances leading to his creation. In portraying the Monster as more human, and more moral, than his human creator, Mary Shelley was affirming the spirituality of the Monster as a person against the creation of him as a mere object. The power of Mary Shelley's moral vision lies in its inescapable warning that an absolute denial of the spiritual aspects of life is inimical to our humanity. Without being explicitly religious, *Frankenstein* encapsulates a new kind of secular humanist

spirituality that denies outright materialism.

In summary, this thesis argues that the interface between religion and biology, concerning the nature of the living body and the mind, despite initial appearances, cannot be simply analysed in terms of atheists versus believers, with both sides holding stereotypical views. If Lawrence showed some atheistic tendencies, he appeared to withdraw in the end to a more conservative socio-political, and religious, position. Combe's unorthodoxy cannot be denied, but he was a long way from being an outright atheist. He professed himself to be the spokesman of a new kind of natural religion, and his profession seems to have been sincerely held. Mary Shelley, an atheist by her upbringing, had a view of natural morality inherent in humankind so highly developed that it was no less than a spiritual view of what it is to be human. It seems that, in spite of the convictions of orthodox contemporaries, materialism and atheism did not necessarily go hand in hand.

Given the orthodox association of materialism and atheism, however, and the difficulty of discussing these things directly, we have seen that morality, the pragmatic manifestation of the chain made up of materiality, immortality and morality, was always to the fore in these case studies. The three episodes studied illustrate a spectrum of attitudes towards scientific materialism, and it is found that ultimately, it was the necessity for a secure basis for morality that shaped the responses. In the case of Rennell and Abernethy, they were defending a religious basis of morality anchored in the Christian doctrine of a soul 'superadded' to the body. As a dissenter, Lawrence's basis of morality was probably similar to Priestley's, which allowed a more materialistic conception of man to be compatible with religion, and therefore with a moral view of human existence. For William Hamilton, he was defending the philosophical basis of free will as the *sine qua non* for any morality. In rejecting what he termed 'doctrinal Christianity', Combe found an alternative basis for morality in the concept of natural law, while Mary Shelley asserted the spirituality in our humanity as the basis for a humanist morality. These contemporaneous attitudes illustrate the spectrum of responses towards materialism and morality at the turn of the nineteenth century in Britain, and over time, it is the secular humanist morality encapsulated by Mary Shelley's moral vision that would gain increasing numbers of followers.

II

As specific episodes in the interface of science and religion, what has this study contributed to our understanding of the history of science and religion as a whole? In assessing the significance of this period in this respect, the thesis will conclude by attempting to answer three major questions. First, how had this period, which looked back to the heydays of the mechanical philosophy with its inherent duality of matter and mind, been a period of transition in scientific attitude? Secondly, in what ways did the issues raised by the study of life and the mind anticipate the Darwinian controversy for religion, in both its ultimate concern and in its conduct in interacting with science? And lastly, what were the social and cultural changes brought about by this period of relationship between science and religion?

The supposed scientific materialism of Lawrence's and Combe's theories of life and the mind was perceived to be atheistic in its tendency. For this reason, it is a fact too easily missed that the scientific materialism in this period actually had its intellectual parentage in Newton's mechanical philosophy, which was the lynch-pin in forging the holy alliance between science and religion in the eighteenth century. The dualism fundamental to the system of the mechanical philosophy devised in the seventeenth century, by Descartes and others, seemed to be compatible with the dualism at the heart of orthodox Christian beliefs. However, neither in science nor in religion was the dualism of body and soul an easy distinction to draw. The Platonic dualism of the early Church was tempered by Aristotelianism from the thirteenth century, and the soul was seen as the substantial form of the body. Since according to Aristotle, form was inseparable from matter, Thomas Aquinas and others laboured to harmonise Aristotelian philosophy to make it compatible with religious doctrines. But given the Thomistic belief in the soul as the substantial form of the body, difficulties manifested themselves in attempts to understand the mind. It seemed clear that animals shared many of the features of the human mind: memory, appetites, the ability to process sensory information, and even volition. If these were attributes of animals, what aspects of the human mental life were the unique results of the immortal soul? Considerations like this resulted in long-standing debates among theologians and natural philosophers. The advent of Cartesian dualism accentuated the mind-matter issues. By drawing a categorical distinction between *res extensa* and *res cogitans*, Descartes equated the soul with thinking, and so with the mind. In effect, this brought matters to a crisis by bringing to the fore the

diminishing role of the immaterial soul, a process which had started ever since Aquinas tried to integrate Aristotelianism with Christianity. Cartesian dualism, by nature of the extreme distinction between body and mind, rendered it possible to ignore the immaterial soul, and to concentrate on mechanistic materialism as a way to explain all living phenomena, including mental phenomena – this was exactly the stance taken by the French materialists like La Mettrie, Diderot and d'Holbach. If the real dualistic distinction was not between bodies and souls but between bodies and minds, then it was easy to dismiss the concept of soul. But if animals could be shown to have minds too, then it was equally easy to reject any basis for morality—animals were not moral creatures. Lawrence and Combe, in their way of theorising about life and mind, were perceived as adopting the scientific materialism which had its parentage in the atheistic interpretations of Cartesianism of the generation of French philosophers after Descartes.

As a reaction against the extreme form of materialism, towards the late eighteenth century, especially in England, there was a revival of vitalist philosophy to deal with life. In Theodore Brown's article mapping out the transition from mechanism to vitalism in English physiology, John Hunter is hailed as the one 'who completed the dismantling of the Royal Society's mechanistic physiology'.[2] In his methodology, Hunter's experiments 'consisted in the collection of multiple instances of the living body's unique and complicated behaviour', instead of the mechanistic approach of 'concentrating on potentially reducible aspects of the "oeconomy"'.[3] Robert Schofield in *Mechanism and Materialism* summarises Hunter's achievement as 'through the influence of his teaching and writing', Hunter 'passed to the next century, cloaked in the infinite respectability of his persistent empiricism, a heritage of vitalism'.[4] In contrast to the 'materialistic explanation in which none of the essential causes of phenomena inhere in matter as such, but rather result from the geometry of size and shape and the dynamics of force', Hunter invoked the 'living principle to explain nearly all animal and vegetable physiological phenomena – of growth, heating, cooling, healing, resistance to putrefaction, digestion', and so on.[5]

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[2] Theodore Brown, 'From Mechanism to Vitalism in Eighteenth-Century English Physiology', *Journal of History of Biology*, 7 (1974): 179-216, 181.

[3] Ibid., 182.

[4] Robert Schofield, *Mechanism and Materialism – British Natural Philosophy in An Age of Reason* (Princeton, 1970), 209.

[5] Ibid., 208-9.

In his methodology, Hunter was meticulously empirical, but in his theorising, he adopted an approach which was antithetical to the mechanistic philosophy.[6]

If vitalism was Hunter's reaction against the mechanistic explanations of the phenomena of life, his philosophical position was probably more closely aligned with Kantian idealism than has been hitherto ascribed. In its Christianized form, idealism re-emerged in the Renaissance as an alternative to the Aristotelian philosophy of Scholasticism, and during the seventeenth-century, as the philosophical position against the materialistic aspects of the mechanical philosophy. However, seventeenth-century idealism receded against the dominance assumed by the mechanical philosophy, with its foundation in empiricism and materialism, as the successful metaphysical basis for science. Immanuel Kant's (1724 –1804) *Critique of Pure Reason* (1781) was the first major idealist challenge to the philosophical basis of Newtonian science. Kant's transcendental idealism, when applied to science, meant that sense experience alone was not a sufficient basis of knowledge of the external world, and that knowledge depended on the organinzing and interpreting functions of the mind. Scientific explanations need not depend exclusively on materialism or atomistic causes; spiritual or nonatomical causes were as acceptable as material ones.[7] For Hunter the 'idealist', the vital principle was a genuinely tenable explanation, but for Lawrence, the 'vital principle' was dismissed as a 'God-of-the-gaps' answer when science reached its frontier of knowledge. What was being illustrated by the Lawrence controversy, and to a certain extent, by the Edinburgh phrenological debate, was that the materialism inherent in the mechanical philosophy, when applied to biology, was unable to sustain the alliance between science and religion as it had done so successfully under Newtonian physics. That 'materialism and atheism go hand in hand' was itself not a foregone conclusion. While the maxim appeared to apply to the French materialists, who applied the mechanical philosophy in its logical extreme to biology, materialism as an inherent component in the mechanical philosophy had been made to serve religion, to point to a sentient Creator. It was 'mechanical materialism' that was embodied in Newton's *Principa*, and it was Newtonian physics that had enshrined the tradition of natural theology. What has been highlighted by the episodes studied was that when the

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[6] See for instance the numerous experimental results recorded in John Hunter, *On the Animal Oeconomy* (Philadelphia, 1840).

[7] Philip F. Rehbook, *The Philosophical Naturalists, Themes in Early Nineteenth-Century British Biology* (Wisconsin, 1983), 15 –19.

mechanical philosophy was applied to biology, it profoundly touched on the issues concerning Man's place in Nature. As Whitehead has remarked, the fundamental duality involved in the mechanical philosophy, of matter and mind, and in between matter and mind 'lie the concept of life, organism, functions, instantaneous reality, interaction, order of nature, which collectively form the Achilles heel of the whole system'.[8] The mechanical philosophy, when applied to the physical universe, had been an ally to religion, but when the philosophy was progressively applied to the study of life and the mind, it became a foe to religion.

When Leslie Stephen discoursed on materialism in 1886, he emphasised that 'materialism, in the first place, represents the necessary and proper attitude of the man of science, that is, of physical science.'[9] Speaking of materialism as a philosophical or metaphysical doctrine 'that matter is the sole ultimate reality' – that 'there is nothing which is not material', and the opposite doctrine, that 'mind is the sole ultimate reality' – that 'nothing exists except mind variously modified', Stephen related 'the conclusion':

> to which modern speculation is gravitating is, I think, in some form or other, that the antithesis does not really represent a contradiction, but rather two methods of combining experience, each perfectly legitimate in its own sphere, and leading to apparent contradiction, when, and only when, there is a misunderstanding as to the true limits of possible knowledge.[10]

To put it more strongly, it is not that materialism is intrinsically anti-religion, but it is when materialism is applied to the exclusion of the opposite doctrine. Frankenstein personified this 'misunderstanding as to the true limits of possible knowledge', and the timeless iconic status Frankenstein has attained is perhaps pointing to our tacit recognition of the verity of Stephen's diagnosis, and the danger that such a misunderstanding of true limits of possible knowledge might bring.

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[8] Alfred North Whitehead, *Science and the Modern World* (Cambridge, 1926), 80-1.

[9] Leslie Stephen, *What is Materialism? A Discourse delivered in South Place Chapel, Finsbury, EC. on Sunday Morning, March 21st 1886.* A 16-page pamphlet published by South Place Religious Society, Finsbury, E.C. (No. 9 issue), 2.

[10] Ibid., 2.

III

The central thesis of this study has been to argue that in the first half of the nineteenth century, the ultimate concern in the science and religion debates was a secure basis for morality. Was this ultimate concern peculiar to the issues related to the study of life and the mind? Did it prevail into controversies revolving round evolutionary theories? In assessing how the issues raised by the study of life and the mind anticipated the Darwinian controversy, it is interesting to begin by relating two comments on the period. The first one is from Charles Raven in his Edinburgh Gifford Lectures (1951-2), where he named the greatest challenge to religion in early nineteenth-century Britain as:

> The development of a mechanistic philosophy involving the restriction of the field of science to the categories of weight and measurement and the extension of it to include the organic and the human, was obviously the most serious challenge to religion.[11]

In that respect, Raven was agreeing with Whitehead in naming the stresses on the relationship in science and religion as caused by applying the mechanistic philosophy to the study of the organic and the human. 'Yet the actual course was very different from what might have been expected', Raven concluded, and described the century's domination by the question of species sparked off by Darwin's evolutionary theory. The second comment comes from Pietro Corsi in his study on Baden Powell. Here, Corsi has similarly noted that in the early decades of the nineteenth century, the greatest challenge to religion in Britain was physiology, not geology. Corsi remarks that it is surprising that physiology should be allowed to develop without being caught up in any major science-religion controversies like geology or evolution for the rest of the century.[12] The observations of Raven and Corsi are undoubtedly accurate, but neither of them attempted to provide any explanation as to why physiology was supplanted by evolutionary theory as the most serious challenge to religion.

It is the contention of this thesis that at the back of the debates concerning the nature of life and the mind in the pre-Darwinian period there always loomed the pressing politico-religious concern with the civic behaviour of the masses, and

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[11] Charles Raven, *Natural Religion and Christian Theology*, 2 vols. (Cambridge, 1953), I: 170.

[12] Pietro Corsi, *Science and Religion, Baden Powell and the Anglican Debate, 1800-1860* (Cambridge, 1988), 49-60.

therefore a concern with the foundations of morality. When materialistic views of life and the mind were criticised by orthodox thinkers, it was the implications for a secure basis for morality that were behind their criticisms. One possible explanation is that the ultimate concern for a secure basis of morality still prevailed in the post-Darwinian period; the only difference was that the concern was transferred from the study of life and the mind on to the implications of the evolutionary theory. Two pertinent 'religious' responses, from Adam Sedgwick and Samuel Wilberforce, towards the implications of evolution would appear to support this argument.

The first one came from the Reverend Adam Sedgwick in his apoplectic reaction against the *Vestiges of the Natural History of Creation*, the book which brought 'an evolutionary vision of the universe into the heart of everyday life' in early Victorian society.[13] In a letter to Charles Lyell, Sedgwick related that when he 'read some pages of the foul book', it filled him 'with such expressible disgust' that he threw it down. Speaking of the anonymous author of *Vestiges*, Sedgwick continued to Lyell:

> And what shall we say to his morality and his conscience, when he tells us he has 'destroyed all distinction between moral and physical'; when he makes sin a mere organic misfortune? ... If the book be true, the labours of sober induction are in vain; religion is a lie; human law is a mass of folly, and a base injustice; morality is moonshine; ... and man and woman are only better beasts![14]

The following passage in *Vestiges* was probably where Sedgwick's quote in the letter had come from:

> It is hardly necessary to say, much less to argue, that mental action, being proved to be under law, passes at once into the category of natural things. Its old metaphysical character vanishes in a moment, and the distinction usually taken between physical and moral is annulled.[15]

Sedgwick was so incensed by passages such as this that he told Lyell he 'could have crushed the book by proving it base, vulgar in spirit ... false, shallow, worthless' – and he did, first in a scathing review of eighty-five pages in *Edinburgh Review* in

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[13] James Secord, *Victorian Sensation* (Chicago, 2000), xviii.

[14] John W. Clark and Thomas McK. Hughes, *The Life and Letters of the Reverend Adam Sedgwick*, 2 vols. (Cambridge, 1890), II: 83-84.

[15] [Rober Chambers], *Vestiges of the Natural History of Creation*, 2nd edn. (London, 1844), 333-4. This crucial passage was modified in later editions; see 12th edn. (London, 1884), 373 and lxvii; as quoted in Robert Young, 'The Impact of Darwin on Conventional Thought', in Anthony Symondson (ed.), *The Victorian Crisis of Faith* (London, 1970), 13 – 35, note No. 9, 32.

1845,[16] and then, in a preface of 450 pages, with an appendix of a further 150 pages, to a new edition of the pamphlet on the *Studies of the University of Cambridge* (itself usually only about 100 pages long). Like Rennell, Sedgwick was ordained by the Anglican Church; his campaign against *Vestiges* was reminiscent of Rennell's against Lawrence. However, Sedgwick's response had to be understood as coming from a renowned geologist who also had an enlightened view of the Bible. Professor of Geology at Cambridge, and at various times, President of the Geological Society, a Fellow of the Royal Society, President of the British Association in 1833 and its Geological Section many times, Sedgwick had argued against those, like William Buckland, who attempted to use geological evidence to support a fairly literal reading of *Genesis* on the Deluge.

That Sedgwick should have responded with such vehemence to the notions contained in *Vestiges* that 'destroyed all distinction between moral and physical' was an indication of the strength of that ultimate concern concerning the basis of morality. Although the quotation from the *Vestiges* above, which sparked off Sedgwick's tirade in his letter to Lyell, referred to Combe's theory of the mind, Sedgwick's subsequent critiques showed an increasing concern with evolution as the threat to morality, rather than any specific theories of physiology or psychology. Published in 1844, it was not until 1884 that the author of *Vestiges* was made public. There had been widespread speculation that George Combe was its author precisely because one of the tenets in this new evolutionary theory was that 'phrenology showed that the principle of the uniformity of nature should extend to man and to his mind and brain'.[17] Nevertheless, it was Chambers' evolutionary theory taken as a whole, with its attempt to apply the concept of uniform natural laws to the history of life as Lyell had done for the history of the earth, which was to dominate the future debates. Evolutionary theory was seen as effecting a kind of levelling between humankind and other life forms. It was this levelling which incensed Sedgwick to the core of his being because such levelling of man with other life forms removed the distinction of human beings as above the brutes, and threatened the basis of human morality. We can see the same concern for moral foundations in Charles Lyell's own response to evolutionary theory when he first heard that his friend Charles Darwin was espousing it. In a remarkable entry in his private journal in 1858, Lyell wrote:

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[16] Adam Sedgwick, 'Natural History of Creation', *Edinburgh Review*, 82 (1845): 1-85.

[17] Robert Young, *op. cit.*, 16.

> If the geologist dwelling exclusively on one class of facts, which might be paralleled by the existing creation [arrives] at conclusions derogating from the elevated position previously assigned by him to Man, if he blends him [man] inseparably with the inferior animals & considers him as belonging to the earth solely, & as doomed to pass away like them & have no farther any relation to the living world, he may feel dissatisfied with his labours & doubt whether he would not have been happier had he never entered upon them & whether he ought to impart the result to others.[18]

Lyell's feeling that it might be better not to propagate such ideas to the public surely reflects a fear that such ideas would be socially and politically subversive.

When Darwin's *The Origin* was published in 1859, it was Bishop Samuel Wilberforce who adopted the same role as Rennell did against Lawrence, or Sedgwick against Chambers. Wilberforce's review of *The Origin* in the *Quarterly Review* highlighted his concern for Darwin's evolutionary theory stemmed from a concern for a secure basis of morality:

> Such a notion is absolutely incompatible not only with single expressions in the word of God on that subject of natural science with which it is not immediately concerned, but, which in our judgment is of far more importance, with the whole representation of that moral and spiritual condition of man which is its proper subject-matter. Man's derived supremacy over the earth; man's power of articulate speech; man's gift of reason; man's free will and responsibility; man's fall and man's redemption; the incarnation of the Eternal Son; the indwelling of the Eternal Spirit, -- all are equally and utterly irreconcilable with the degrading notion of the brute origin of him who was created in the image of God, and redeemed by the Eternal Son assuming to himself his nature.[19]

Darwin's *The Origin*, instead of taking the course of the science and religion debate in the first half of the nineteenth century into a different direction, was a continuation of the debate on the interpretation or re-interpretation of man's place in nature. This reinterpretation centred on the issues concerning the origin of life and the nature of the mind in the first half of the nineteenth century and was transferred on to the question of the origin of species. It is in appreciating the impact of Darwin's *The Origin* on conventional thought that the question of species can be fairly appreciated as involving the ultimate concern for a secure basis of morality, in the same way as

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[18] L. G. Wilson (ed.), *Sir Charles Lyell's Scientific Journals on the Species Question* (New Haven, 1970), 196; quoted in Michael Bartholomew, 'Lyell and Evolution: An Account of Lyell's Response to the Prospect of an Evolutionary Ancestry for Man', *British Journal for the History of Science*, 6 (1972): 261-303, 293.

[19] Samuel Wilberforce, 'Darwin's *The Origin of Species*', *Quarterly Review*, 108 (1860): 225-64, 258.

the debates on life and the mind in the antecedent period. The perceptive comments of Young in this regard serve as an incisive commentary on the relationship between Darwin's *The Origin* and the debates studied in this thesis. Referring to the contemporary objections to *The Origin*, Young affirms that 'the objections made sense' given that:

> The separation of mind and free will from the course of material nature lies at the bottom of our traditional idea of responsibility and of the spiritual aspect of man. ... The extraordinary interest in evolution thus arose naturally from the union, which the theory implied between man's spiritual nature and his body, particularly his nervous system ... that the exclusion of all non-material causes from nature did not merely eliminate miracles from Genesis. It threatened the status of mind and will and the hope for a moral meaning to life outside of life itself. [20]

In offering an explanation to the comments by Raven and Corsi, this thesis argues that the course of debate between science and religion in nineteenth-century Britain had always been dominated by this ultimate concern for a secure basis for morality. Young has emphasised that the 'the idea of opposing theology could not have been further from the minds of the main evolutionists', and that 'their aim was to reconcile nature, God, and man', and one could safely presume, in order to uphold the existing basis for morality. However, the efforts of the evolutionists were strained because there is a more fundamental conflict 'centring on the relationship of the mind and the brain, and that science cannot sanction a metaphysic which allows any forces or events which transcend the continuity of nature or natural laws'.[21] 'Yet the actual course was very different from what might have been expected' – Raven's remark on the course of science and religion debate being 'hijacked' by *The Origin*, has to be put in the context that the difference was not one of ultimate concern, but of subject matter.

If the ultimate concern had remained the same, why was there a change in subject matter after Darwin's *The Origin*. A plausible explanation is to borrow Thomas Kuhn's analysis on scientific progress. According to Kuhn, scientists spend most of their time engaging in 'normal science' – solving well-defined 'puzzles' within an accepted framework of concepts and methodologies, a 'paradigm'. Periodically, a 'scientific revolution' is precipitated by an unacceptable accumulation

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[20] Robert M. Young, *op. cit.*, 20-1.

[21] Ibid., 21.

of unsolved puzzles within 'normal science': these puzzles could only be solved within a new paradigm.[22] Evolutionary thought had been around for almost a century before Darwin's *The Origin*. Darwin's grandfather, Erasmus Darwin, was amongst the first to express such a concept in his epic poem on nature entitled *Zoonomia* (1794). Unlike his predecessors, Darwin's *The Origin* was a treatise that effected a 'scientific revolution' – it afforded a new way of understanding species mutations and extinction by the mechanism of natural selection. In affording this insight, Darwin was a quintessential example of Kantian idealism for *Naturphilosophie*. Kant's follower Schelling had remarked that 'the world of phenomena is a mind-ordered world and that knowledge of the mind's ordering principles is not to be gained empirically but through intellectual intuition'.[23] It was Darwin's intellectual intuition which brought about a paradigm shift in understanding the history of life. One plausible explanation why physiology was allowed to develop without being caught up in any major science-religion controversies like geology or evolution for the rest of the nineteenth century could be that the physiology was engaging itself in puzzle-solving in Kuhnian terms. In other words, science and religion debates happen on the paradigmatic level, not on the puzzle-solving level. The theorising on the origin of life and the nature of the mind were at the centre of the Lawrence and Combe controversies, and these were questions on the level of finding a new paradigm. The issues of the origin of life and the nature of the mind, fundamental as they were to the study of life, had also been the concerns of theologians. However, as Lawrence pointed out, the vital principle did not actually advance the understanding of the origin of life, and to ask how the vital forces exert their agency was an ultimate question that took us to the boundaries of knowledge.[24] Lawrence's diagnosis would appear to be right, and physiology spent the rest of the nineteenth century doing the puzzle-solving of 'normal science', without drawing attention to itself. This was probably why physiology was not caught up in any major science-religion controversies after those early decades in the nineteenth century. As intellectual history, if the century after Darwin was driven by the quest to understand the origin of species or the laws of heredity, the first half of the nineteenth century was preoccupied with the nature of life and the mind. This

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[22] Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Chicago, 2nd edn., 1970).

[23] Philip F. Rehbock, *op. cit.*, 17, summarising Schelling.

[24] See discussion in chapter three, section ii, of this thesis.

preoccupation was diverted by Darwin, but the unresolved issues related to the nature of Life and human consciousness have become uppermost again in our time.

IV

As a study of 'Life before Darwin', it may now be instructive to consider what light, if any, this study throws upon the later period, after the appearance of Darwin's *On the The Origin of Species*. In assessing the social and cultural implications of the interface between science and religion in the period between 1815 and 1859, three headings *professionalization*, *authority* and *separatism* serve as useful pointers for examining the changes that directly impinged on the course of the Darwinian controversy. R. G. Collingwood describes the scientific work of the nineteenth century as 'largely devoted to establishing the autonomy of the biological sciences as forming a separate realm, independent of physics or the sciences of matter on the one hand and the science of mind on the other'.[25] Collingwood's remark is a reflection of the long-standing dominance of the mechanical philosophy which, with its fundamental duality of matter and mind, demarcated knowledge into the realms of physics and metaphysics. In 1837 when the Reverend William Whewell wrote his treatise on *History of the Inductive Sciences*, this autonomy for the biological sciences as a separate realm was evidently still in the process of being carved out. Without this autonomy already in place, it was not surprising that Whewell related the history of physiology and comparative anatomy in terms of other sciences:

> ... we conceive an organized body to be one in which the parts are there for the sake of the whole, in a manner different from any mechanical or chemical connexion; we conceive a function to be not merely a process of change, but of change connected with the general vital process.[26]

However, it was equally clear to Whewell that the study of life was 'in a manner different from any mechanical or chemical connexion'. In fact, the period under study witnessed not only the forging of autonomy for the biological sciences from physics and metaphysics, it was also the period when the 'scientists' fought to establish their independence as a professional class. That the forging of intellectual

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[25] R.G. Collingwood, *The Idea of Nature* (Oxford, 1945), 133.

[26] William Whewell, *History of the Inductive Sciences, from the Earliest to the Present Times*, 3 vols. (London, 1837), III: 377.

autonomy of biology and social independence of the scientists should go in tandem might be more than a historical happenstance, and could be a correlation that suggested some form of causation between the two movements. The etymology of the term 'biology' and 'scientist' reflects their respective 'battles' for autonomy. Lawrence introduced the term 'biology' into the English language from German in 1818, but 'comparative anatomy', 'physiology', and 'natural history', were preferred for the best part of the nineteenth century. Similarly, the term 'scientist' (to denote the practitioner of any form of natural science) was not in use until Whewell invented it in 1834, and despite his effort to reassert its usefulness, it enjoyed little currency until towards the end of the nineteenth century.[27] As Charles Babbage complained in 1851, 'Science in England is not a profession: its cultivators are scarcely recognized even as a class. Our language itself contains no *single* term by which their occupation can be expressed'.[28]

The independence that the scientists tried to establish during this period had two aspects. On the one hand, they were seeking to promote themselves as a distinct professional class; and on the other, they were trying to break free from, what Huxley called, 'the yoke of the clergy'. These two aspects were related, as it was the case that the 'spokesmen for scientific professions desired the social and cultural prestige and recognition that had been and to a large degree still was accorded the clergy'.[29] However, to free science from clerical control, the scientific community had to become self-defining before they could act as a cohesive force in effecting independence from clerics. For instance, the membership reforms of the Royal Society in 1847 were steps towards such a self-definition by the scientists, and were correlated with 'the process of clerical withdrawal from the world of science [which] commenced in the third quarter of the century'.[30] In the Lawrence episode, the professionalization of the surgeons was the determining factor in shaping the outcome, and the legality of Rennell offering a critique on Lawrence's science was never in doubt. The Lawrence episode was an account of this process of

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[27] William Whewells, *Philosophy of the Inductive Sciences*, 2 vols. (London, 1840), I:113. 'We need very much a name to describe a cultivator of science in general. I should incline to call him a scientist'. First coined the word 'scientist' in 1834, and reasserted its usefulness in his book in 1840.

[28] Charles Babbage, *The Exposition of 1851, or Views of the Industry, the Science, and the Government of England* (London, 1851), 189.

[29] Frank Turner, *Contesting Cultural Authority, Essays in Victorian Intellectual Life* (Cambridge, 1993), 170.

[30] Ibid., 186, and Table 1, 187.

professionalization of the scientists in its early stages. To elevate the surgeons to a professional class was a governing principle for Abernethy. Hunter was eulogised because he had elevated surgery from being a manual occupation to being a gentleman profession. Hunter's anatomical collections epitomised the image of surgery as a science, to be studied by the mind, and helped to cast off for good its age-old image as a trade, to be practised by the hand of the barber-surgeons. The Hunterian 'vital principle' was espoused because it could be made to dovetail with the religious doctrine of the soul, thereby reinforced the religious basis of morality, and conferred social respectability to its class of proponents. Safeguarding and cultivating this new and fragile professional image of the surgeons was uppermost in the institutional politics of the Royal College of Surgeons and the network of hospital governors when they decided the action to be taken against Lawrence's lectures. Indeed, even for Lawrence, it was the stake on his professional career that determined his personal response to retract. In this respect, Lawrence anticipated Charles Lyell, who also curbed the expression of his opinions for fear of offending both clerical and scientific colleagues.

The Reverend Rennell, in penning his critique, was a typical example of the gentleman-parson who took a keen interest in the study of nature, and the parson-naturalists were a norm for the practice of science in the pre-Darwinian period. Adam Sedgwick, William Whewell, Thomas Chalmers, and even Charles Darwin in his early career, were fine examples of this tradition. June Goodfield-Toulmin comments on Rennell's critique as 'invading a physiological issue with theological arguments'.[31] However, the concept of clerical invasion simply did not apply in the pre-Darwinian period. In the first instance, the contemplation of nature for edification was within the remit of those ordained for ministry, and was part of the tradition of natural theology. This tradition was not only adopted by the clerics, but by the 'scientists' alike. Frank Turner remarks on the fact that in the pre-Darwinian period, 'many scientists considered the moral and metaphysical imperatives of natural theology as a proper and integral part of their vocation and not as an intrusion of extraneous categories imposed by outside institutions'.[32] However, Turner also notes that 'by the second quarter of the nineteenth century substantial developments

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[31] June Goodfield-Toulmin, 'Some Aspects of English Physiology: 1780-1840', *Journal of History of Biology*, 2 (1969): 283-320, 316.

[32] Frank Turner, *op. cit.*, 178.

in geology, physics, biology, physiology, psychology, and the philosophy of science challenged or cast into doubt theological assumptions and portions of the Bible'. It was in those years that 'both Charles Lyell and Charles Darwin complained about the hindrance to scientific advance raised by metaphysics and theology'.[33] In 1818, Lawrence had made a similar complaint publicly in his lecture:

> I say, *physiologically* speaking; and beg you to attend particularly to this qualification: because the theological doctrine of the soul, and its separate existence, has nothing to do with this physiological question, but rests on a species of proof altogether different. ... An immaterial and spiritual being could not have been discovered amid the blood and filth of the dissecting room.[34]

Lawrence's response anticipated the complaint that was to intensify and become more wide-spread in the second quarter of the nineteenth century. It was, however, far from the vituperative outburst of Huxley in defending Darwin's *The Origin*: 'Extinguished theologians lie about the cradle of every science as the strangled snakes beside that of Hercules.'[35]

Remarking on this process of professionalization, A. W. Benn named its result as 'a transfer of authority from religious to naturalistic belief'.[36] It is arguable whether the process of professionalization could have been effected without the corresponding transfer of authority. Frank Turner states it more strongly, and attributes 'the Victorian conflict between religious and scientific spokesmen' to 'this shift of authority and prestige' from the clerics to the scientists.[37] It was not just authority that had been transferred, but that it 'represented the exchange of one form of faith for another'. Turner suggests that this 'movement from religion to science in Western culture', had also 'meant the transfer of cultural and intellectual leadership and prestige from the exponents of one faith to those of another'.[38] The study of Combe's deployment of phrenology illustrates this subtle transfer of authority taking place, and how Combe used phrenology to devise an alternative faith based on science to replace traditional religion. The phenomenal sales of *The Constitution of Man* had facilitated such transfer of authority, and the fact that *The Constitution* was

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[33] Ibid., 173.

[34] William Lawrence, *Lectures on Physiology, Zoology and Natural History of Man, delivered at the Royal College of Surgeons in 1818* (London, 1819), 7.

[35] T. H. Huxley, *Collected Essays,* II : 52; as quoted in Turner, *op. cit.*, 174.

[36] A.W. Benn, *A History of English Rationalism in the Nineteenth Century* (London, 1906), 198.

[37] Turner, *op. cit.,* 175.

[38] Ibid., 170.

found in households alongside the Bible (and *Pilgrim Progress*) when no other books were to be found was symbolic of this rivalry from the new faith.

John van Wyhe in his recent study of phrenology questions the general characterization of phrenology as a reform science. He argues that the more constant elements of phrenology throughout its existence, was 'the power it gave to its practitioners to speak authoritatively on all things human'.[39] Gall, the founder of organology, and the first to study mental functions empirically, emphasised that Nature – 'was his sole authority', and that it was 'the greater epistemological power of his natural knowledge' which conferred 'certainty where metaphysics produced only confusion'.[40] Spurzheim, Gall's assistant, took organology into the realm of human nature, and formulated the system of phrenology. According to Spurzheim, human nature was still largely a mystery partly because 'man was generally treated as being distinct from the rest of Nature, which is false.'[41] Spurzheim promised certainty even for the realm of human nature, and it was on attending one of Spurzheim's lectures that Combe became a convert. For Combe, the epistemological certainty conveyed by phrenology was the essence of its authority, and it was this certainty that won him over to the cause of phrenology where salvation could be more definite than under the scheme of predestination. In devising a religion from the system of phrenology, Combe was trying to confer a new authority with its final appeal to the inflexible laws of nature. In gaining followers through propagating this new religion through his various phrenological treatises, Combe further undermined the authority of the established churches, in a period when disestablishment was also a political issue. The appeal to the authority of nature as the ultimate arbitrator in Combe's new religion was to facilitate the process of substituting nature for God eventually, and in turn, paved the way for the humanist religion of Mary Shelley's kind to take root, where the authority resides in the intrinsic belief of the spiritual essence in humankind.

In discussing the impact of Darwin on conventional thought, Robert Young argues that 'the period from about 1820 to 1875 was one in which science made it

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[39] John van Wyhe, 'Was Phrenology a Reform Science? Towards a New Generalization for Phrenology', *History of Science*, 62 (2004): 313-331, 313.

[40] F.J.Gall to R. Meier, 3 March 1806, translated and reprinted in 'Correspondence of Dr. Gall', *Phrenological Journal* , 19 (1846), 36-42, 40; quoted in Wyhe, *op. cit.*, 320.

[41] J.G. Spurzheim, *The Physiognomical System of Drs. Gall and Spurzheim* (London, 1815), 8; quoted in Wyhe, *op. cit.*, 321.

clear to enlightened theological opinion that a third interpretation of the relationship between science and theology was necessary'.[42] Perhaps in the view of the strategy of the professionalizing scientists to argue for the incompatibility of scientific and religious thinking, Baden Powell, Charles Kingsley, Leslie Stephen were amongst those who seemed to decide that the best way to preserve religious authority was to demarcate its territory as separate from that of science. Since scientific authority could no longer be relied upon to support religion, the authority of science must be held to be relevant only to knowledge of the natural world. This left religion free to stake a claim for supreme authority over moral issues, as Baden Powell suggested:

> Scientific and revealed truth are of essentially different natures, and if we attempt to combine or unite them, we are attempting to unite things of a kind which cannot be consolidated, and shall infallibly injure both ... In physical science, we must keep strictly to physical induction and demonstration; in religious enquiry, to moral proof, but, never confound the two together.[43]

In the pre-Darwinian period, however, this separatist approach seems to have been inconceivable, or at least, it was not conceived. Scientific theories had clear implications for ideas about the basis of morality and science could not, therefore, be separated from religion. It is a sign of the strength of this view that even the materialist thinkers accepted it, and tried, accordingly, to develop alternative accounts of the basis for morality, which were consistent with their materialism. Before the separatist approach was devised as a way forward for science and religion to relate, even materialist thinkers felt the need to claim that their approach did not undermine morals. They could only do so, however, by recourse to the Enlightenment tradition of a rational morality. As we have seen, in the pre-Darwinian period this approach met resistance from more orthodox religious believers who clung to the view that morality needed religious sanction. Once again, we can see the importance of authority in these debates. When upholders of more orthodox religious views decided to separate religious from scientific authority, in the period after Darwin, they did so by seizing upon moral values as the site of their authority. This was tantamount to saying that rationally based moralities cannot suffice. It is beyond the remit of this thesis to pursue these later developments, but it is by no means clear that religion won the day. The Victorian period was the first age of mass atheism and it would seem that for most Victorians the foundations of

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[42] Robert Young, *op. cit.*, 22.

[43] Corsi, *op. cit.*, 189.

morality were to be found in rational, not religious, thought. It seems impossible to deny that the writings of Lawrence, and especially of Combe, and Mary Shelley's Frankenstein, contributed to this secular approach to morality.

I. Primary Unpublished

EUL MS College Minutes, Univ. of Edinburgh, 16 April 1827, re: Against Combe's use of University Room, first series, IV: f. 352.

EUL MS College Minutes, Univ. of Edinburgh, 18 November 1836, re: Hamilton's appointment to a chair, first series, V, f. 498.

EUL MS College Minutes, Univ. of Edinburgh, 26 November 1838, re: Hamilton's Lecture Courses, first series, VI: f. 75-96.

EUL MS College Minutes, Univ. of Edinburgh, 25 November 1843, re: Hamilton's motion against Religious Test, second series, VI: f. 491.

NLS Parliamentary History, 31 (1794-1795).

NLS MS 1812 (335), II, f.307, Report from the Committee of Secrecy to the House of Commons, relative to certain violent proceedings that have taken place.

NLS MS 1817 (34), IV, f.1, Report from the Committee of Secrecy appointed in a subsequent session to consider the same subject.

NLS MS 1817 (387), IV, f.9. Second Report from the Committee of Secrecy of the same.

NLS MS 1817 (399), IV, f.17, Report by theLords' Committee appointed to take into consideration of the same subject.

NLS MS 1818 (69), III, f.49, Report from the Committee of Secrecy appointed in the following session to consider the same subject.

NLS MS 1818 (95), III, f.55, Report by the Lords' Secret Committee appointed to examine into the same matter.

NLS MS 7238, f. 8, Andrew Combe to George Combe, from Brussels, 18 April 1836.

NLS MS 7238, f.10, Andrew Combe to George Combe, 7 July 1836.

NLS MS 7238, f.11, Albert Collins to George Combe, 12 August 1836.

NLS MS 7238, f.14, Andrew Combe to George Combe, 12 August 1836.

NLS MS 7378, f.34, George Combe to David Welsh, 7 April 1836 [Draft Letter].

NLS MS 7261, f. 48-57, Dr Horace Mann (from Boston) to George Combe, April, July, October 1841.

NLS MS 7261, f.31, Sir George Mackenzie to George Combe, 7 August 1841.

NLS MS 7388, f.810, George Combe to M. B. Sampson, 2 December 1844.

NLS MS 7283, f.117-120, Dr William B. Carpenter to George Combe, 2 February 1847.

NLS MS 7283, f.88-9, Dr Samuel Brown to George Combe, 13 June 1847, re: 'Argument of Design for proving existence of God from Nature'..

NLS MS 7283, f.90, Dr Samuel Brown to George Combe, 17 June 1847, re: God, Nature and Man.

NLS MS 7392, f.548-554, George Combe to Marian Evans, 10 April 1852, (13-page-long letter)

NLS MS 7325, f. 91-2, Marian Evans to George Combe, 30 March 1852.

NLS MS 7392, f. 559, George Combe to Charles Bray, 15 April 1852.

NLS MS 7333, f.93, Marian Evans to George Combe, 22 January 1853.

NLS MS 7392, f.704-5, George Combe to Marian Evans, 17 November 1853.

II. Primary Published

Abernethy, J., *An Enquiry into the Probability And Rationality of Mr Hunter's Theory of Life; Being the Subject of the First Two Anatomical Lectures Delivered before the Royal College of Surgeons*, London, 1814.

———, *Introductory Lectures Exhibiting Some of Mr. Hunter's Opinions Respecting Life and Disease, Delievered in the Royal College of Surgeons, London, in 1814 and 1815.* London, 1815

———, *Physiological Lectures, Exhibiting a General View of Mr. Hunter's Physiology, and of His Researches in Comparative Anatomy, Delivered before the Royal College of Surgeons, in the Year 1817.* London, 1817.

———, *The Hunterian Oration for the Year 1819, Delivered before the Royal College of Surgeons, in London*, London, 1819.

———, *Reflections on Gall and Spurzheim's System of Physiognomy and Phrenology, Addressed to the Court of Assistants of the Royal College of Surgeons, in London, June 1821,* London, 1821.

———, *Lectures on Anatomy, Surgery and Pathology, Delivered at St. Bartholomew's Hospital*, London, 1828.

[A Freethinker], *Conjectures Upon the Mortality of the Human Soul*, London, 1778.

Alison, A., *Sermons on the Seasons*, Edinburgh, 1819.

Alison, A. and Alison, J. R., *Some Account of My Life and Writings: An Autobiography*, Edinburgh, 1883.

Alison, A. and Forbes, W., *A Sermon Preached in the Episcopal Chapel, Cowgate, Edinburgh, November 16, 1806, the Day after the Funeral of Sir William Forbes of Pitsligo, Baronet*, Edinburgh, 1808.

Alison, A. and Tytler, A. F., *Travels in France, During the Years 1814-15: Comprising a Residence at Paris, During the Stay of the Allied Armies, and at Aix, at the Period of the Landing of Bonaparte*, London, 1815.

Anon., 'Abernethy on the Vital Principle', *Edinburgh Review*, 23 (1814): 384-98

———, 'Account of the Life and Writings of Mrs Trimmer', *British Critic*, N.S.2 (1814): 373-79.

———, 'A Letter from a Lady on the Death of her Mother, 19 December, 1811', *The Edinburgh Christian Instructor*, 12 (1816): 305-6.

———, 'Frankenstein, or the Modern Prometheus', *Quarterly Review*, 18 (1818): 379-85.

———, 'Lawrence and Pring on Physiology', *The Electic Review*, 35 (1822): 481-505.

———, 'A Letter from Paris, to George Petre Esq', *Edinburgh Review*, 26 (1816): 75-77.

———, 'On Judging of the Dead', *The Edinburgh Christian Instructor*, 13 (1816): 164.

———, 'On Lawrence's Introductory Lectures', *Anti-Jacobin Review*, 56 (1819): 313-23.

———, 'On Lawrence and Abernethy', *The Monthly Magazine (or British Register)*, 47 (1819): 451.

———, 'On the Future Existence of the Lower Animals', *The Edinburgh Christian Instructor*, 12 (1816): 315.

———, 'On the Immortality of the Soul', *The Edinburgh Christian Instructor*, 11 (1815): 155-60.

———, 'On the Origin of Evil', *The Edinburgh Christian Instructor*, 10 (1815): 153-58.

———, 'On William Lawrence', *Gentleman's Magazine*, 89 (1819): 438.

———, 'Practical Sermons, No. 25, by a Deceased Clergyman on Psalm xxxix:4', *The Edinburgh Christian Instructor*, 10 (1815): 25-37.

———, 'Practical Sermons, No. 26, "On Death"', *The Edinburgh Christian Instructor*, 10 (1815): 97-103.

———, 'Review of Dewar's Sermon on the Happiness of Heaven', *The Edinburgh Christian Instructor*, 13 (1816): 262-67.

———, 'Review of Frankenstein', *The Scots Magazine & Edinburgh Literary Miscellany*, 81 (1818): 249-253.

———, 'Review of Samuel Horsley's Sermons – A Series of Nine Serons on the Nature of Evidence by which the Fact of Our Lord's Resurrection is Established', *The Electic Review*, N.S. 5 (1816), 157.

———, 'Spurzheim's Physiognomical System', *British Critic*, N.S.3 (1815): 468-87.

———, 'On Frankenstein, or the Modern Prometheus', *British Critic*, N.S. 9 (1818): 431-38.

———, 'Review of "Remarks on Scepticism"', *Gentleman's Magazine*, 89, Part 1 (1819): 438.

———, 'Review of "Remarks on Scepticism" by the Reverend Thomas Rennell', *Edinburgh Monthly Review*, 3 (1820): 69-88.

———, 'Review of *an Account of the Late Improvements in Galvanism, with a Series of Curious and Interesting Experiments, Performed before the Commissioners of the French National Institute, and Repeated Lately in the Anatomical Theatres of London'*, by John Aldini." *Edinburgh Review* 3 (1803): 194-98.

———, 'Review on "Essays on Phrenology" by Drs Gall and Spurzheim', *Edinburgh Monthly Review*, 3 (1820): 123-45.

———, 'Review on John Abernethy's *an Inquiry into the Probability and Rationality of Mr. Hunter's Theory of Life'*, *The Edinburgh Review*, 23 (1814): 384-98.

———, 'Sacred Zoology', *The Christian Repository and Religious Register*, 1 (1816): 65-75.

[A Member of the Church of England], *Eternal Punishment Proved to Be Not Suffering but Privation*, London, 1817.

Aristotle, *De Anima*, tr. Lawson-Tancred, H., Harmondsworth, 1986.

Augustine, *Confession*, Harmondsworth, 1960.

Babbage, C., *The Exposition of 1851, or Views of the Industry, the Science, and the Government of England*, London, 1851.

Barclay, J., *An Inquiry into the Opinions, Ancient and Modern Concerning Life and Organization*, London, 1822.

[Brown, T.], 'A Letter from Charles Villers to Georges Cuvier, on a New Theory of the Brian, as the Immediate Organ of the intellectual and Moral Faculties, by Dr Gall of Vienna, Metz, 1802', *Edinburgh Review*, 2 (1803): 147-60.

Burke, E., *Reflections on the Revolution in France*, 1790, Harmondsworth, 1968.

Carlile, R., *The Accusation, Condemnation and Abjuration of Galileo Galilei, before the Holy Inquisition at Rome in 1633*, 1819.

———, 'Address to Men of Science', In *Tracts on Religion, Mainly Caused by Paine's Age of Reason*, 1-35, London, 1821.

Cockburn, A., *A Philosophical Essay Concerning the Intermediate State of Blessed Souls*, London, 1772.

Cockburn, H., *Journal of Henry Cockburn, 1831-1834*, 2 vols., Edinburgh, 1874.

———, *Memorials of His Time*, 1856; Edinburgh, 1971.

Combe, G., *Essays on Phrenology, or an Inquiry into the Principles and Utility of the System of Drs Gall and Spruzheim, and into the Objections Made against It*, Edinburgh, 1819.

———, *Phrenological Observations on the Cerebral Development of David Hoggart*, Edinburgh, 1821.

———, *Elements of Phrenology*. Edinburgh, 1824.

———, *Letter from George Combe to Francis Jeffrey, Esq. In Answer to His Criticism on Phrenology, Contained in No. Lxxxviii of the Edinburgh Review*. Edinburgh, 1826.

———, *Essay On Human Responsibility, as Affected by Phrenology*. Edinburgh, s.n., 1826.

———, *The Constitution of Man in Relation to External Objects*, Edinburgh, 1828, 9th edn., 1860.

———, *Outlines of Phrenology*, Edinburgh, 5th edn., 1835.

———, *An Address to the People of Scotland, Occasioned by the Present Disputes on the "Constitution of Man", as These Relate to Scriptural Instruction, and Coercive Provisions for Its Diffusion among the Population: With a Postscript, Containing Strictures on Articles V and Vi in No. Cxxix of the Edinburgh Review*, Edinburgh, 1836.

———, *The Suppressed Documents, or, an Appeal to the Public against the Conductors of the Scottish Guardian*, Glasgow, 1836.

———, *Testimonials on behalf of George Combe*, Edinburgh, 1836.

———. *Moral Philosophy, or, the Duties of Man Considered in His Individual, Social and Domestic Capacities*, Edinburgh, 1840.

———, *Thoughts on Capital Punishment*, Edinburgh, 1847.

———, *Lecture on the Comparative Influence of the Natural Sciences and 'the Shorter Catechism,' on the Civilization of Scotland, Delivered on 25 November, 1851, in the Queen Street Hall, Edinburgh*, Edinburgh, 1851.

———, *Secular Instruction, or Extension of Church Endowments?* Glasgow, 1852.

———, *An Inquiry into Natural Religion, Its Foundation, Nature, and Applications*, Edinburgh, 1853.

———, *The Currency Question: Considered in Relation to the Act of the 7th & 8th Victoria, Chap. 32, Commonly Called the Bank Restriction Act*, London, 5th edn., 1856.

———, *On the Relation between Science and Religion*, 1847; Edinburgh, 3rd edn., 1857.

———, *Answer to the Attack on the Constitution of Man, Contained in Nature and Revelation Harmonious*, Edinburgh, 2nd edn., 1857.

———, *On Teaching Physiology and Its Applications in Common Schools*, Edinburgh, 1857.

———, *Letter to the Editor of the Scotsman*, 10th February 1858.

———, *Our Rule in India*, London, 1858.

———, *Moral Philosophy*, Edinburgh, 1893.

———, *Discussions on Education, The Select Works of George Combe;* 4 vols., London, 1893.

Combe, A. and Combe, G., *The Life and Correspondence of Andrew Combe, M.D*, Edinburgh, 1850.

Combe, G., and Edinburgh Association for Procuring Instruction in Useful and Entertaining Science, *Lectures on Popular Education: Delivered to the Edinburgh Association for Procuring Instruction in Useful and Entertaining Science, in April and November 1833*, Edinburgh, 1838.

Combe, G., Gall, F. J. and Spurzheim J. G., *Outlines of the Phrenological System of Drs. Gall and Spurzheim*, Edinburgh, 1819.

Combe, G., Kennedy, C. J., and Scottish Association for Opposing Prevalent Errors, *Answer by George Combe to the Attack on 'the Constitution of Man', Contained in 'Nature and Revelation Harmonious: A Defence of Scripture Truths' Assailed in Mr. George Combe's Work on the Constitution of Man, &C.*, Edinburgh, 1848.

Combe, G., Lovett, W. and London Mechanics' Institution, Birkbeck School, *The Birkbeck School, London Mechanics' Institution*, Edinburgh: s.n., 1848.

Clark, J.W. and Hughes, T. McK. (eds.), *The Life and Letters of the Reverend Adam Sedgwick*, 2 vols., Cambridge, 1890.

Darwin, C., *The Origin of Species*, introd. J. W. Burrow, Harmondsworth, 1985.

Descartes, R., *Discourse on Method*, tr. Sutcliffe, F.E., 1637, Harmondsworth, 1968.

———, *Treatise of Man*, tr. Hall, T. S., Harvard, 1972.

Diderot, D., *Rameau's Nephew & D'alembert's Dream*, 1769, Harmondsworth, 1966.

[D'Oyly, G.], 'A Survey of the Major Literature by Abernethy, Lawrence, Morgan and Rennell', *Quarterly Review*, 22 (1819): 1-34.

Drew, S., *An Original Essay on the Immateriality and Immortality of the Human Soul Founded Solely on Physical and Rational Principles*, 1802, London, 5th edn., 1831.

Edinburgh Phrenological Association, and George Combe, *Rules of the Edinburgh Phrenological Association, Instituted 1855: Letter on the Study of Phrenology*, Edinburgh, 1858.

The English Reports, vol. 37., Edinburgh, 1904.

Fearn, J., *An Essay on Immortality*, London, 1814.

Gall, F. J., *A Biographical History of Philosophy*, 4 volumes, tr.Lewes, G. H, London 1857.

[Gentleman, A]. *Vindicie Mentis: An Essay of the Being and Nature of Mind*, London, 1702.

Gillespie, W. H., *Combe Versus the Heathen, or, a Proof, from Facts, of the Falsity of Mr. Combe's Dogma Concerning Some Heathen Nations*, Edinburgh, 1837.

———, *An Exposure of the Unchristian and Unphilosophical Principles Set Forth in Mr. Combe's 'Constitution of Man, Considered in Relation to External Objects'; Being an Antidote to the Poison of That Publication*, Edinburgh, 2nd edn, 1836.

[Gordon, John]. 'Abernethy on the Vital Principle', *Edinburgh Review*, 23 (1814): 384-98.

———, 'The Doctrines of Gall and Spurzheim', *Edinburgh Review*, 25 (1815): 227-68.

Haggart, D., Robertson, G. and Combe, G., *The Life of David Haggart: Alias John Wilson, Alias John Morison, Alias Barney M'coul, Alias John M'colgan, Alias Daniel O'Brien, Alias the Switcher*, Edinburgh, 1821.

Hamilton, W., *Lectures on Metaphysics*, Edinburgh, 1859.

Hogg, T. J., *The Life of Shelley*, London, 1858.

Horsley, S., 'Review of *Horsley's Sermons*', *Eclectic Review* N.S., 5 (1816): 157.

Hunter, J., *Essays and Observations on Natural History, Anatomy, Physiology, Psychology, and Geology; Being the Posthumous Papers on Those Subjects*, ed. Richard Owen, London, 1861.

———, *The Works of John Hunter*, ed. Palmer, J. F., 4 vols., London, 1835.

Hume, D., *A Treatise of Human Nature*, 2 vols., 1739, Glasgow, 1962.

Huxley, T. H., 'Science and Christian Tradition', *Collected Essays*, vol. V, London, 1894.

[Jeffrey, F.], 'Review of *a System of Phrenology*, by George Combe, Late President of the Phrenological Society', *Edinburgh Review*, 44 (1826): 253-318.

———, 'Review of Dugald Stewart's Account of the Life and Writings of Thomas Reid', *The Edinburgh Review*, 6 (1804): 269-87.

Jones, F., (ed.), *Mary Shelley's Journal*, Oklahoma, 1947.

Lawrence, W., *An Introduction to Comparative Anatomy and Physiology, Being the Two Introductory Lectures Delivered at the Royal College of Surgeons*, London, 1816.

———, *Lectures on Physiology, Zoology and the Natural History of Man, Delivered at the Royal College of Surgeons*, 1819, London, 3rd edn., 1823.

———, *The Hunterian Oration, Delivered at the Royal College of Surgeons on the 14th February, 1846, by W. Lawrence, F.R.S., Surgeon Extraordinary to the Queen, London, 1846,* London, 1846.

Locke, J., *An Essay Concerning Human Understanding*, ed. Yolton, J. W., 1690, London, 1993.

Macilwain, G., *Memoirs of John Abernethy, with a View of His Lectures, His Writings and Character; with Additional Extracts from Original Documents*, London, 1856.

Martineau, H., *Biographical Sketches*, London, 1869.

Oxonian, *Radical Triumvirate*, London, 1820.

Paley, W., *Natural Theology; or Evidence of the Existence and Attributes of the Deity -- Collected from the Appearance of Nature*, 1802, Edinburgh, 1816.

———, *Reasons for Contentment, Addressed to the Labouring Part of the British Public*, London, 1793.

Plato, *The Timaeus*, Harmondsworth, 1977.

Priestley, J., *History and Present State of Discoveries Relating to Vision*, London, 1772.

———, *An Examination of Dr. Reid's Inquiry into the Human Mind on the Principles of Common Sense, Dr Beattie's Essay on the Nature and Immutability of Truth, and Dr. Oswald's Appeal to Common Sense on Behalf of Religion*, London, 1774.

———, *A Free Discussion of the Doctrines of Materialism*, London, 1778.

———, *Disquisitions Relating to Matter and Spirit*, London, 1782.

———, *The Doctrine of Philosophical Necessity Illustrated*, London, 1782.

———, *Of the Security of a Virtuous Course, Printed and Published by the Unitarian Society for Promoting Christian Knowledge and The Practice of Virtue, Containing Seven Sermons Y Dr. Price and Dr. Priestley*, London, 1791.

———, *The History of the Present State of Electricity*, 3rd edition, introd. Robert Schofield, New York, 1966.

Priestley, J. and Price, R., *A Free Discussion of the Doctrines of Materialism and Philosophical Necessity*, 1778, London, 1978.

Rennell, T., 'Remarks on Scepticism', *British Critic*, N.S., 8 (1817): 63-73.

———, *Remarks on Scepticism, Especially as It Is Connected with the Subjects of Organization and Life, Being an Answer to the Views of M. Bichat, Sir T.C. Morgan, and Mr Lawrence, Upon Those Points*, London, 1819.

———, *The Unambitious Views of the Church of Christ, A Sermon Preached at the Anniversary Meeting of the Stewards of the Sons of the Clergy, in the Cathedral Church of St. Paul, on Thursday, May 17, 1821*, London, 1822.

———, *A Letter to Henry Brougham, Esq., M.P. upon the Durham Speech and the three articles in the last Edinburgh Review, upon the subject of the clergy, 10 February 1823*, London, 1823.

Sedgwick, A., 'Natural History of Creation', *Edinburgh Review*, 82 (1845): 1-85.

Shelley, M. *Frankenstein, or the Modern Prometheus -- the 1818 Text*, edited and introduced by Marilyn Butler, 1818, Oxford, 1994.

Shelley, P., *The Complete Works of Percy Bysshe Shelleys*, ed. Ingpen, R. and Peck, W. E., London, 1965.

———, *Selected Poetry and Prose of Percy Bysshe Shelley*, ed. Baker, C., New York, 1951.

Stephen, L., *What Is Materialism? A Discourse Delivered in South Place Chapel, Finsbury, on Sunday Morning, 21 March 1886*, London, 1886.

Todd, R. (ed.), *Cyclopaedia of Anatomy and Physiology*, London, 1847.

Trevelyan, A., *A Startling Letter to C. J. Blomfield, D.D.: Some Remarks on the Words Devil, Satan and Hell*, London, 1849.

Trimmer, Sarah. *The Charity School Spelling Book, Containing Words Divided into Syllables, Lessons with Scripture, Names, &C.*, London, 5th edn., 1800.

———, *Easy Introduction to the Knowledge of Nature and Reading the Holy Scriptures Adapted to the Capacities of Children*, 1780, London, 15th edn., 1817.

———, *Some Account of the Life and Writings of Mrs. Trimmer: With Original Letters*, 3rd edn. London, 1825.

Walker, G., *The Vagabond*, 2 vols., London, 1799.

Watson, H. C., *Statistics of Phrenology -- Being a Sketch of the Progress and Present State of That Science in the British Isles*, London, 1836.

Whewell, W., *History of the Inductive Sciences from the Earliest to the Present Times*, 3 vols., London, 1837.

———, *Philosophy of the Inductive Sciences*, 2 vols., London, 1840.

Wilberforce, S., 'Darwin's *Origin of Species*', *Quarterly Review*, 108 (1860): 225-64.

Wilson, L.G.(ed.), *Sir Charles Lyell's Scientific Journals on the Species Question,* New Haven, 1970.

III. Secondary References

Ahnert, T., 'The Soul, Natural Religion and Moral Philosophy in the Scottish Enlightenment', *Eighteenth-Century Thought*, 2 (2004): 233-53.

Aries, P., *The Hour of Our Death*, trans. Helen Weaver, Harmondsworth, 1977.

Augustine, *Confessions*, Harmondsworth, 1960.

Babbage, C., *The Exposition of 1851, or Views of the Industry, the Science, and the Government of England*, London, 1851.

Baker, C. (ed.), *Selected Poetry and Prose of Shelley*, New York, 1951.

Bartholomew, M., 'Lyell and Evolution: An Account of Lyell's Response to the Prospect of an Evolutionary Ancestry for Man', *British Journal for the History of Science*, 6 (1972): 261-303.

Benn, A. W., *A History of English Rationalism in the Nineteenth Century*, London, 1906.

Bodemer, C.W., 'Regeneration and the Decline of Preformationism in Eighteenth-Century Embryology', *Bulletin of the History of Medicine*, 38 (1964): 20-31.

Briggs, A., *The Age of Improvement*, London, 1965.

Brook, C.W., *Carlile and the Surgeons*, Glasgow, 1943.

Brooke, J. H., 'Science and Dissent: Some Historiographical Issues', *Science and Dissent in England, 1688-1945*, ed. Paul Wood, 19-37, Aldershot, 1988.

———, *Science and Religion, Some Historical Perspectives*, Cambridge, 1991.

Brooke, J. H., and Cantor, G. N., *Reconstructing Nature, the Engagement of Science and Religion, Glasgow Gifford Lectures*, Edinburgh, 1998.

Brookes, D. R., *Thomas Reid -- An Inquiry into the Human Mind, on the Principles of Common Sense*, Edinburgh, 1997.

Brown, T., 'From Mechanism to Vitalism in Eighteenth-Century English Physiology', *Journal of History of Biology* 7 (1974): 179-216.

Brown, S. J., *Thomas Chalmers & The Godly Commonwealth in Scotland*, Oxford, 1982.

———, *The National Churches of England, Ireland, and Scotland, 1801-1846*, Oxford, 2001.

Buckley, M. J., *At the Origins of Modern Atheism*, New Haven, 1987.

Bynum, C. W., *The Resurrection of the Body in Western Christianity, 200-1336*, Columbia, 1995.

Campbell, R. H. and Skinner, A. (eds.), *The Origins and Nature of the Scottish Enlightenment*, Edinburgh, 1982.

Cantor, G. N. and Shapin, S., 'Phrenology in Early Nineteenth-Century Edinburgh: An Historiographical Discussion', *Annals of Science*, 32 (1975): 195-256.

Cantor, G. N. and Kenny, C., 'Barbour's Fourfold Way: Problems with His Taxonomy of Science-Religion Relationships', *Zygon*, 36 (2001): 765-781.

Chadwick, H., *Augustine*, Oxford, 1984.

Chadwick, O., *The Secularization of the European Mind in the Nineteenth Century*, Cambridge, 1975.

Chitnis, A. C., *The Scottish Enlightenment: A Social History*, London, 1976.

———, *The Scottish Enlightenment and Early Victorian English Society*, London, 1986.

Clark, J.C.D., *English Society 1688-1832* (Cambridge, 1985).

Coleman, W., *Biology in the Nineteenth Century, Problems of Form, Function, and Transformation*, The Cambridge History of Science Series, Cambridge, 1977.

Colley, L., *Britons: Forging the Nation 1767-1837*, New Haven, 1992.

Collingwood, R. G., *The Idea of Nature*, Oxford, 1945.

———, *The Idea of History*, Oxford, 1994.

Cook, H., *The Decline of the Old Medical Regime in Stuart London*, Cornell, 1986.

Cooter, R., *The Cultural Meaning of Popular Science: Phrenology and the Organization of Consent in Nineteenth Century*, Cambridge, 1984.

Corsi, P., *Science and Religion: Baden Powell and the Anglican Debate, 1800-1860*, Cambridge, 1988.

Cosh, M., *Edinburgh, The Golden Age*, Edinburgh, 2003.

Crombie, A. C., *The History of Science from Augustine to Galileo*, New York, 1969.

Crook, N., and Guiton, D., *Shelley's Venomed Melody*, Cambridge, 1986.

Daiches, D., Jones, P., and Jones, J. (eds.), *A Hotbed of Genius: The Scottish Enlightenment, 1730-1790*, 1986, Edinburgh, 1996.

Dawson, V. P., *Nature's Enigma: The Problem of the Polyp in the Letters of Bonnet, Trembley, and Reaumur*, Philadelphia, 1987.

Davie, G. E., *The Democratic Intellect*, 2nd edn., Edinburgh, 1964.

———, *The Social Significance of the Scottish Philosophy of Common Sense, Being the Dow Lecture Delivered Before the University of Dundee on 30 November, 1972*, Edinburgh, 1973

Debus, A. G., *Man and Nature in the Renaissance*, Cambridge, 1978.

De Giustino, D., *Conquest of Mind*, London, 1975.

Desmond, A., *The Politics of Evolution -- Morphology, Medicine, and Reform in Radical London*, Chicago, 1989.

Dudley-Edwards, O., *Burke and Hare*, Edinburgh, 1993.

Eshet, D., 'Rereading Priestley: Science at the Intersection of Theology and Politics', *History of Science*, 39 (2001):127-159, 138-42.

Figlio, K. M., 'The Metaphor of Organization: An Historiographical Perspective on the Bio-Medical Sciences of the Early Nineteenth Century', *History of Science*, 14 (1976): 17-53.

Fouke, D., 'Mechanical and 'Organical' Models in Seventeenth-Century Explanations of Biological Reproduction', *Science in Context*, 3 (1989): 365-82.

Frede, M., 'On Aristotle's Conception of the Soul', in Nussbaum, M. and Rorty, A. (eds.), *Essays on Aristotle's De Anima*, Oxford, 1992.

Gash, N., *Aristocracy and People, Britain 1815-1865*, The New History of England, 8, London, 1979.

Gibbon, C., *The Life of George Combe,* 2 vols., London, 1878.

Gillispie, C. C., *Genesis and Geology: A Study in the Relations of Scientific Thought, Natural Theology, and Social Opinion in Great Britain, 1790-1850*, Harvard, 1966.

———, *Science and Polity in France at the End of the Old Regime*, Princeton, 1980.

Goodfield-Toulmin, J., 'Some Aspects of English Physiology: 1780-1840', *Journal of History of Biology*, 2 (1969): 283-320.

Haigh, E., *Xavier Bichat and the Medical Theory of the Eighteenth Century*, Wellcome Institute, London, 1984.

Hall, T. S., *Ideas of Life and Matter: Studies in the History of General Physiology 600 B.C. -- 1900 A.D.*, 2 vols., Chicago, 1969.

Halévy, E., *A History of the English People*, 3 vols., 1924; Harmondsworth, 1937.

Hankins, T. L., *Science and the Enlightenment*, Cambridge, 1985.

Harris, J. A., 'Answering Bayle's Question: Religious Belief in the Moral Philosophy of the Scottish Enlightenment', *Oxford Studies in Early Modern Philosophy*, vol. 1, Oxford, 2003, 229-253.

Harrison, J. F. C., *A History of the Working Men's College, 1854- 1954*, London, 1954.

———, *Society and Politics in England, 1780 – 1960*, New York, 1965.

———, *Robert Owen and the Owenites in Britain and America: The Quest for the New Moral World*, London, 1969.

———, *The Second Coming: Popular Millenarianism, 1780-1850*, London, 1979.

Hazard, P., *European Thought in the Eighteenth Century*, Harmondsworth, 1965.

Henry, J., 'Palaeontology and Theodicy: Religion, Politics and the *Asterolepis* of Stromness', in Shortland, M. (ed.), *Hugh Miller and the Controversies of Victorian Science*, Oxford, 1996, 151-170.

———, *The Scientific Revolution and the Origins of Modern Science* (Houndmills, 2002).

Hilton, B., *The Age of Atonement: The Influence of Evangelicalism on Social and Economic Thought, 1795 – 1865*, Oxford, 1988.

Holmes, G., *Augustan England: Professions, State and Society, 1680-1730*, London, 1982.

Inkster, I., 'The Social Context of an Educational Movement: A Revisionist Approach to the English Mechanics' Institutes, 1820-1850', *Oxford Review of Education*, 2 (1976):277-307.

———, 'London Science and the Seditious Meetings Act of 1817', *British Journal for the History of Science*, 12 (1979): 192-96.

Inkster, I. and Morrell, J., *Metropolis and Province – Science in British Culture, 1780-1850*, London, 1983.

Jacyna, L.S., 'Immanence or Transcendence: Theories of Life and Organization in Britain, 1790-1835', *Isis*, 74 (1983): 311-29.

———, 'Images of John Hunter in the 19th Century', *History of Science,* 21 (1983): 85-108.

———, *Philosophic Whigs: Medicine, Science and Citizenship in Edinburgh, 1789-1848*, London, 1994.

Josephy, M. K., 'Introduction to the 1831 *Frankenstein*', in Shelley, M., *Frankenstein*, Oxford, 1969.

Kobler, J., *The Reluctant Surgeon*, London, 1960.

Kuhn, T. S., *The Structure of Scientific Revolutions*, 2nd edn., Chicago, 1970.

Lake, H., *Physician to Shelley and Mary*, London, 1965.

Levine, G. and Knoepflmacher, U. C. (eds.), *The Endurance of Frankenstein*, Berkeley, 1974.

Lynch, M., *Scotland – A New History*, London, 1991.

MacIntyre, A., *After Virture – A Study in Moral Theory*, 2nd edn., London, 1985.

McManners, J., *Death and the Enlightenment*, Oxford, 1981.

Mellor, A. K., *Mary Shelley, Her Life, Her Fiction, Her Monsters*, London, 1988.

———, 'Choosing a Text of *Frankenstein* to Teach', in ed. J. Paul Hunter, *Frankenstein,* A Norton Critical Edition, London, 1996, 162-170.

Morrell, J., *Science, Culture and Politics in Britain, 1750-1870*, Collected Studies Series, Aldershot, 1997.

Morris, R. J., *Cholera 1832: The Social Response to an Epidemic*, Croom Helm Social History Series, London, 1976.

Mudford, P., 'Lawrence's *Natural History of Man* (1819)', *Journal of History of Ideas*, 22 (1968): 430-436.

Newson, D., *Two Classes of Men*, London, 1972.

Parry, N. and Pary, J., *The Rise of the Medical Profession*, Guildford, 1976.

Peacock, A. J., *Bread or Blood, The Agrarian Riots in East Anglia, 1816*, London, 1965.

Priestman, M., *Romantic Atheism: Poetry and Freethought, 1780-1830*, Cambridge, 1999.

Pringle-Patison, A. S., *The Idea of Immortality - Gifford Lecture*, Edinburgh, 1922.

Pyle, A., 'Animal Generation and the Mechanical Philosophy: Some Light on the Role of Biology in the Scientific Revolution', *History and Philosophy of the Life Sciences*, 9 (1987): 225-54.

Raven, C., *Natural Religion and Christian Theology*, 2 vols., Cambridge, 1953.

Rea, R., *The English Press in Politics, 1760-1774*, Nebraska, 1963.

Read, D., *Peterloo – The Massacre and the Background*, London, 1958.

Rehbock, P. F., *The Philosophical Naturalists: Themes in Early Nineteenth-Century British Biology*, Winconsin, 1983.

Richardson, A., *British Romanticism and the Science of the Mind*, Cambridge, 2001.

Rieger, J., 'Dr. Polidori and the Genesis of *Frankenstein*', *Studies in English Literature*, 3 (1963): 468.

Ritterbush, P. C., *Overtures to Biology: The Speculations of Eighteenth-Century Naturalists*, New Haven, 1964.

Robertson, J. M., *A History of Freethought in the Nineteenth Century*, 2 vols., London, 1969.

Robinson, C. E. (ed.), *The Frankenstein Notebooks, a facsimile edition of Mary Shelley's Manuscript Novel, 1816-1817, (with Alterations in the Hand of Percy Bysshe Shelley) as it survives in Draft and Fair Copy Deposited by Lord Abinger in the Bodleian Library, Oxford*, 2 vols., London, 1996.

Roe, S. A., *Matter, Life and Generation: Eighteenth-Century Embryology and the Haller-Wolff Debate* Cambridge, 1981.

Rosner, L., *Medical Education in the Age of Improvement, 1760-1826*, Edinburgh, 1991.

Rowe, W., *Thomas Reid on Freedom and Morality*, Cornell, 1991.

Royle, E., *Chartism*, Seminar Studies in History, 1980, Harlow, 2nd edn., 1986.

———, 'Mechanics' Institute and the Working Classes, 1840-1860', *The Historical Journal*, 14 (1971): 305-321.

Ruestow, E. G., *The Microscope in the Dutch Republic: The Shaping of Discovery*, Cambridge, 1996.

Rupert Hall, A., 'On Whiggism', *Journal of History of Science*, 21 (1983): 45-59.

Schaffer, S., 'Natural Philosophy and Public Spectacle in the Eighteenth Century', *History of Science*, 21 (1983): 1-43.

Schofield, R., *Lunar Society in Birmingham: A Social History of Provincial Science and Industry in Eighteenth-Century Britain*, Cambridge, 1963.

———, *Mechanism and Materialism: British Natural Philosophy in An Age of Reason*, Princeton, 1970.

Scott, P. D., 'Vital Artifice: Mary, Percy and the Psychopolitical Integrity of *Frankenstein*', *The Endurance of Frankenstein*, ed. Levine and Knoepflmacher, California, 1974.

Secord, J. A., 'Extraordinary Experiment: Electricity and the Creation of Life in Victorian England', in Gooding, D., Pinch, T. and Schaffer, S. (eds.), *The Uses of Experiment*, Cambridge, 1989, 338-71.

———, *Victorian Sensation*, Chicago, 2000.

Shapin, S., 'Nibbling at the Teats of Science', in Inkster, I. and Morrell, J. (eds.), *Metropolis and Province, Science in British Culture, 1780-1850*, Philadelphia, 1983, 152-164.

Sher, R., *Church and University in the Scottish Enlightenment, The Moderate Literati of Edinburgh*, Edinburgh, 1985.

Shortland, M. and Yeo, R. (ed.), *Telling Lives in Science: Essays on Scientific Biography* (Cambridge, 1996).

Smith, C., *The Science of Energy: A Cultural History of Energy Physics in Victorian Britain*, London, 1998.

Smith, C.U.M., *The Problem of Life, an Essay in the Origins of Biological Thought*, London, 1976.

Stewart-Robertson, J. C., 'Thomas Brown (1778-1820)', *Oxford Dictionary of National Biography*, 2004 [http://www.oxforddnb.com/view/article/3655/accessed 19 November 2004].

Tannoch-Bland, J., 'Dugald Stewart on Intellectual Character', *British Journal of History of Science*, 30 (1997): 307-20.

Temkin, O., 'Basic Science, Medicine, and the Romantic Era', *Bulletin of the History of Medicine*, 37 (1963): 97-129.

Thompson, E. P., *The Making of the English Working Class*, Harmondsworth, 1963.

Thornton, J. L., *John Abernethy*, London, 1953.

Topham, J., 'Science and popular education in the 1830s: the role of the *Bridgewater Treatises*', *British Journal of History of Science*, 25 (1992): 297-330.

Toulmin, S. & Goodfield, J., *The Architecture of Matter*, London, 1962.

Trevelyan, G. M., *English Social History, A Survey of Six Centuries, Chaucer to Queen Victoria*, 1942, Harmondsworth, 1986.

Turner, F., *Between Science and Religion: The Reaction to Scientific Naturalism in Late Victorian England*, Yale, 1974.

———, 'The Victorian Conflict between Science and Religion: A Professional Dimension', in Parsons, G. (ed.), *Religion in Victorian Britain*, Open University, 1988, 170-97.

———, *Contesting Cultural Authority: Essays in Victorian Intellectual Life*, Cambridge, 1993.

Turney, J., *Frankenstein's Footsteps: Science, Genetics and Popular Culture*, New Haven, 1998.

Van Wyhe, J., 'Was Phrenology a Reform Science? Towards a New Generalization for Phrenology', *History of Science*, 62 (2004): 313-331.

Vartanian, A., 'Trembley's Polyp, La Mettrie, and Eighteenth-Century French Materialism', *Journal of History of Ideas*, 11 (1950): 259-86.

———, *La Mettrie's L'homme Machine, A Study in the Origins of an Idea*, Princeton, 1960.

Vasbinder, S. H., *Scientific Attitudes in Mary Shelley's Frankenstein*, Michigan, 1984.

Veitch, J., *Hamilton*, ed. Knight, W., Philosophical Classics for English Reader Series, Edinburgh, 1882.

———, *Sir William Hamilton, The Man and His Philosophy*, Edinburgh, 1883.

———, *Memoir of Sir William Hamilton, Bart.*, Edinburgh, 1869.

Webb, R. K., *The British Working Class Reader, 1790-1848*, London, 1955.

Wellman, K., 'Dilemma and Opportunity, the Physiology of the Soul', *Studies in Eighteenth-Century Culture,* 22 (1992): 301-16.

Wells, K. D., 'Sir William Lawrence, a Study of Pre-Darwinian Ideas on Heredity and Variation', *Journal of History of Biology*, 4 (1971): 319-61.

Westfall, R. S., *The Construction of Modern Science: Mechanisms and Mechanics*, Cambridge, 1977.

Whitehead, A. N., *Science and the Modern Mind*, Cambridge, 1926.

Wiener, J. H., *Radicalism and Freethought in Nineteenth Century Britain: The Life of Richard Carlile*, London, 1983.

Willey, B., *The Eighteenth-Century Background*, London, 1940.

Willis, M., 'Frankenstein and the Soul', *Essays in Criticism*, 45 (1995): 24-35.

Wilson, C., *The Invisible World: Early Modern Philosophy and the Invention of the Microscope*, Princeton, 1995.

Woodward, Sir Llewellyn, *The Age of Reform, 1815-1870*, The Oxford History of England, Oxford, 1938; 2nd edn., 1979.

Yolton, J. W., *Thinking Matter: Materialism in Eighteenth-Century Britain*, Oxford, 1984.

Young, R. M., 'The Impact of Darwin on Conventional Thought', in Symondson A. (ed.) *The Victorian Crisis of Faith*, London, 1970, 13-35.

———, 'Gall', *Dictionary of Scientific Biography*, 16 vols., New York, 1972, V: 250-6.

———, *Mind, Brain and Adaptation in the Nineteenth Century, Cerebral Localization and Its Biological Context from Gall to Ferrier*, Oxford, 1990.

Zachary, C., *The History of the Royal College of Surgeons of England*, London, 1959.

IV. Theses

Baxter, P., 'Science and Belief in Scotland, 1805 – 1868', University of Edinburgh, Ph.D., 1985.

Bynum, W. F., 'Time's Noblest Offspring: The Problem of Man in British Natural Historical Sciences, 1800-1863', University of Cambridge, D. Phil., 1974.

Chitnis, A., 'The Edinburgh Professoriate, 1790-1826 and the University's Contribution to Nineteeth Century British Society', University of Edinburgh, Ph.D., 1968.

De Giustino, D., 'Phrenology in Britain, 1815-1855: A Study of George Combe and His Circle', University of Wisconsin, Ph.D., 1969.

Kitteringham, G. S., 'Studies in the Popularization of Science in England, 1800-30', University of Kent, Ph.D., 1981.

Rosner, L., 'Students and Apprentices: Medical Education at Edinburgh University, 1780-1810', John Hopkins University, Ph.D., 1986.

Topham, J. R., 'An Infinite Variety of Arguments: The Bridgewater Treatises and British Natural Theology in the 1830s', University of Lancaster, Ph.D., 1992.

Williams, J.C., 'Edinburgh Politics, 1832-1852', University of Edinburgh, Ph.D., 1972.

Yule, J. D., 'The Impact of Science on British Religious Thought in the Second Quarter of the 19th Century', University of Cambridge, D. Phil., 1976.